Summary of the Queen Charlotte Sound Synoptic Bottom Trawl Survey, July 6-August 8, 2015

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by

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ABSTRACT

Williams, D. C., Nottingham, M. K., Olsen, N. and Wyeth, M. R. 2018. Summary of the Queen Charlotte Sound synoptic bottom trawl survey, July 6 – August 8, 2015. Can. Manuscr. Rep. Fish. Aquat. Sci. 3136: viii + 64 p.

A bottom trawl survey of Queen Charlotte Sound and southern Hecate Strait was conducted on the fishing vessel Frosti between July 6 and August 8, 2015. The survey was jointly conducted and funded by the Canadian Groundfish Research and Conservation Society (CGRCS) and Fisheries and Oceans Canada (DFO), and was the eighth in a series of surveys that began in 2003. The survey was conducted annually between 2003 and 2005 and biennially on the odd-numbered years after that. This survey is one of a set of long-term and coordinated surveys that together cover the continental shelf and upper slope of most of the British Columbia coast. The objectives of these surveys are to provide fishery independent abundance indices of all demersal fish species available to bottom trawling and to collect biological samples of selected species.

The survey follows a random depth-stratified design and the sampling units are 2 km by 2 km blocks. Two hundred and forty (83.0%) of the 289 blocks assessed in 2015 were successfully fished. The mean catch per usasble tow was 379 kg, with between 7 and 41 species per tow. The average number of species per tow was 24. The most abundant fish species encountered was Arrowtooth Flounder (*Atheresthes stomias)*, followed by Pacific Ocean Perch (*Sebastes alutus,)*, Silvergray Rockfish (*Sebastes brevispinus)* Rex Sole (*Glyptocephalus zachirus*) and Walleye Pollock (*Gadus chalcogrammu*). Biological data, including individual length, weight, sex, maturity, and ageing structures were collected from selected species. Samples were collected from a total of 46 different species of fish. Oceanographic and fishing gear data including water temperature, depth, salinity, and dissolved oxygen, footrope to headline distance and dissolved oxygen were also recorded for most tows.

RÉSUMÉ

Williams, D. C., Nottingham, M. K., Olsen, N et Wyeth, M. R. 2018. Sommaire du relevé synoptique au chalut de fond effectué entre le 2 juillet et el 8 août 2015 dans le détroit de la Reine Charlotte. Can. Manuscr. Rep. Fish. Aquat. Sci. 3136: viii + 64 p.

Un relevé au chalut de fond a été effectué par le navire de pêche Frosti dans le détroit de la Reine Charlotte et dans le sud du détroit d'Hécate entre le 2 juillet et el 8 août, 2015. Le relevé a été réalisé et financé conjointement par la Canadian Groundfish Research and Conservation Society (CGRCS) et Pêches et Océans Canada (MPO). Il s'agit du huitième relevé d'une série qui a commencé en 2003. Le relevé a été effectué chaque année entre 2003 et 2005, et aux deux ans, lors des années impaires, par la suite. Ce relevé fait partie d'un ensemble de relevés à long terme coordonnés qui couvre le plateau continental et le haut du talus de la majorité de la côte de la Colombie-Britannique. Ces relevés servent à obtenir des indices d'abondance indépendants de la pêche pour toutes les espèces de poissons démersaux pouvant être pêchées au chalut de fond, ainsi qu'à prélever des échantillons biologiques d'espèces précises.

Ce relevé est réalisé selon un plan d'échantillonnage aléatoire stratifié, et les unités d'échantillonnage sont des blocs de deux kilomètres carrés. Parmi les 289 blocs évalués en 2015, 240 (83.0 %) ont fait l'objet d'une pêche. La moyenne des prises par trait était de 379 kg, avec une moyenne de 24 espèces différentes de poissons et d'invertébrés par trait. Les espèces de poissons capturées le plus fréquemment étaient la plie à grande bouche (*Atheresthes stomias*), suivi par le sébaste à longue mâchoire (*Sebastes alutus*), le sébaste argenté (*Sebastes brevispinus*), la plie royale (*Glyptocephalus zachirus*) et la morue du Pacifique occidental (*Gadus chalcogrammu*). On a recueilli des données biologiques sur certaines espèces, notamment la longueur, le poids, le sexe, la maturité et l'âge. Les échantillons ont été prélevés sur un total de 46 espèces de poissons différentes. Les données océanographiques et sur les engins de pêche, notamment la température de l'eau, la profondeur, la salinité et la teneur en oxygène dissous, ont également été consignées pour la plupart des traits.

INTRODUCTION

In 2003 a report by the Pacific Scientific Advice Review Committee recommended development of fishery independent relative abundance indices using bottom trawl surveys in British Columbia waters (Sinclair et al. 2003). The report recommended that a pilot survey be conducted in Queen Charlotte Sound (Figure 1). The survey design was synoptic in that it was intended to provide indices for as many species as possible rather than focusing on a limited number of target species.

In February 2003, funding was committed by the Canadian Groundfish Research and Conservation Society for the principal portion of the required vessel and net costs in addition to a significant portion of the scientific staff needed to conduct the survey and analyze the results. Funding by the Science Branch of Fisheries and Oceans Canada (DFO) was committed for additional scientific and sampling staff, and to provide the scientific sampling equipment.

The first Queen Charlotte Sound (QCS) synoptic bottom trawl survey was successfully completed in the summer of 2003 (Olsen et al. 2007a). Following that, additional surveys were planned for the west coast of Vancouver Island (WCVI) beginning in 2004, Hecate Strait (HS) beginning in 2005, and the west coast of Haida Gwaii (WCHG, previously Queen Charlotte Islands) beginning in 2006. These surveys are conducted on a rotating biennial schedule with the QCS and HS surveys conducted in odd-numbered years and the WCVI and WCHG surveys conducted in even-numbered years. These four synoptic bottom trawl surveys provide comprehensive coverage of the continental shelf and upper slope of the British Columbia coast (Figure 1). Surveys are conducted on both chartered commercial fishing vessels as well as Canadian Coast Guard research trawlers.

The QCS survey was conducted annually from 2003 to 2005 (Olsen et al. 2007a, 2007b, and 2007c) and has since been scheduled to occur every second year. This document provides a brief summary of the results and methods from the eighth QCS synoptic bottom trawl survey which occurred between July 6 and August 8, 2015. It is not intended as a comprehensive review of the survey, nor does it provide interpretive analysis of the survey results. Summaries of the previous Queen Charlotte Sound surveys are given in Olsen et al. 2007a, Olsen et al. 2007b, Olsen et al. 2007c, Olsen et al. 2007d, Olsen et al. 2009, Williams et al. 2017 and Nottingham et al. 2018.

METHODS

SURVEY DESIGN

The survey area is Queen Charlotte Sound and the southern part of Hecate Strait excluding near-shore waters and inlets, areas closed to fishing, and protected sponge reef areas (Figure 1). The southern portion of Hecate Strait is included and provides coverage contiguous with the Hecate Strait synoptic bottom trawl survey.

Depth Strata

All of the synoptic bottom trawl surveys along the British Columbia coast have followed the same random depth-stratified design. Each survey area is divided into 2 km by 2 km blocks and each block is assigned one of four depth strata based on the average bottom depth in the block. The four depth strata vary between areas. The depth strata for the QCS synoptic bottom trawl survey are 50-125m, 125-200m, 200-330m, and 330-500m (Table 1). Unlike the other synoptic survey areas where there is only a single spatial stratum, the QCS survey area was split along the Mitchell and Reed Troughs creating northern and southern areas (Figure 2). The combination of two spatial strata and four depth strata yields a total of eight strata (Table 1). For each survey in the QCS series, blocks are randomly selected within each stratum.

Block Allocation

Following the methods in Sinclair et al. (2003), commercial fishery catch data were used to model the expected groundfish catches prior to the first survey in each area. The target number of tows in each stratum was based on providing the most precise catch rate indices for as many species as possible. However, in any given year, not all of the randomly selected blocks will be fishable. Further, after the inaugural survey, a block that has been fished in a previous year may be re-selected. The results of previous surveys in each area are used to estimate both the expected proportion of blocks in each stratum that would not result in a useable tow (predicted failure rate) as well as the expected probability of returning to a block that was successfully fished in a previous survey (predicted revisit rate). The predicted failure and revisit rates are combined into a single probability for each survey area and depth stratum (predicted adjustment). These probabilities are then used to calculate the anticipated number of blocks per stratum required to complete the target number of tows.

When a synoptic bottom trawl survey is conducted on a chartered commercial fishing vessel the contract has been structured such that the survey will continue until the entire set of blocks that have been selected are assessed. Assuming that the predicted failure and revisit rates prove to be accurate, at the end of the survey the final distribution of tows in each strata should match the initial target allocation that was modeled based on the commercial fishing data.

For the 2015 QCS survey, 295 blocks were randomly selected based on a target of 240 useable tows (Table 1).

VESSEL

The survey was conducted aboard the F/V Frosti, a 39 m commercial stern trawler (Figure 3).

FISHING GEAR

The research trawl was an Atlantic Western IIA box trawl net connected to 1,000 kg Thyboron Type II 107 doors (Figure 4). The net was thoroughly cleaned between tows to prevent cross-contamination of catches. The net was also inspected for damage after every tow. If the net was damaged, it was repaired and restored to its original dimensions prior to resuming fishing. Two nets were rigged at the start of the survey so that if one net was damaged beyond what could be immediately repaired, the second one could be used.

The net includes a main body (wing and belly sections), two lengthening pieces and a codend with liner (Figure 5 and Figure 6). The main body of the net has an 11 mm long-link steel chain frame and is constructed from a mix of double 4.5 mm strand 5 inch web, single 3.5 mm strand 5 inch web, and single 3.5 mm strand 4 ½ inch web (Figure 7). The intermediate sections are constructed from single 4.5 mm strand 4 ½ inch web (Figure 8). All web in the main body and lengthening pieces is constructed from a compacted strand braided polyethylene (Euroline Premium). The codend is constructed from double 5 mm strand 4 inch regular braided polyethylene web with a ½ inch 210/20 knotless nylon liner (Figure 8).

The Rockhopper footgear includes flying wing, mid wing, bunt wing and bosom sections (Figure 9). The bosom section is built from 16 inch diameter (worn 18 inch) aircraft tires while the bunt and mid wing sections have 16 inch Rockhopper disks. The flying wings have 5 inch rubber disks with swivel center 16 inch solid bunt bobbins at each end.

The specifications of net and footgear components are shown in Table 2 and dimensions for the assembled trawl pieces are shown in Figure 7 through Figure 9.

SCHEDULE

The survey was split into two sections or "legs" of two to two and a half weeks in duration with five science staff each. Crew changes were on July 20 and August 4 (Table 3).

FISHING PROTOCOL

Fishing was carried out during daylight hours, commencing approximately 30 minutes after sunrise and ending 30 minutes before sunset each day. An average working day length of 15 hours, starting at approximately 0600 hrs in the morning and ending at 2100 hrs in the evening was typical.

Prior to fishing, the selected blocks were reviewed by the captain and chief scientist to determine a candidate set to visit throughout each day. During this review process, one or more blocks might be determined not fishable by the captain based on his experience and knowledge of the area. In such cases the blocks were marked as "rejected

based on prior knowledge". After compiling a list of blocks to be visited, the most efficient route of travel between blocks would be planned.

The captain was asked to inspect each selected block and find a suitable tow location using the following criteria:

1. All tows should follow a depth contour.
2. If a block had been fished in a previous year, follow the same track so as to minimize the survey footprint.
3. If a block had not been fished in a previous year, make a tow entirely within the block and pass through the center of the block.
4. If it is not possible to make a tow through the center of the block, make a tow entirely within the block that passes as close to the center as possible.
5. If it is not possible to make a tow entirely within the block, make a tow such that at least 50 % of the tow is within the block.

The target tow length was 20 minutes long. The tow start was defined as the time at which the net mensuration data indicated stable bottom contact and the headline collapsed to 3-4 m above the bottom. Approximately one minute before the target tow length was completed, net haul back was initiated. The extra minute was intended to account for uptake of slack in the main warps. Although the target on-bottom time was 20 minutes, tows that were at least 15 minutes in length were accepted. This was a pragmatic decision that allowed for retention of many tows that would otherwise have been unusable due to hang-ups or early haul-backs.

Tows were conducted at a target speed of 2.8 to 3.0 nautical miles per hour (5.2 - 5.6 km/hr). When retrieving the net, the captain was asked to maintain a water velocity through the net that was consistent with the rest of the tow.

Tows were made in the target depth stratum of the block. If the only possible tow was in a different depth stratum than that assigned to the block, then the tow was conducted, and the block was reassigned to the appropriate depth stratum.

If it was not possible to find a suitable tow location then the block was marked as "rejected based on on-ground inspection". The vessel would move on to the next selected block.

The result of trawling was either a useable or unusable tow. The most common reasons for deeming a tow unusable were a hang-up of the fishing gear, tear-up of the trawl net or not achieving the minimum bottom contact time. In the event of an unusable tow, additional attempts to fish the block could be made at either the same location or a different location within the block. Alternatively, the block could be deemed unfishable, in which case it was rejected.

If fishing was attempted in a block, the final status of the block would be either "successfully fished on first attempt", "successfully fished after multiple attempts", or "rejected after last attempt failed". Rejected blocks were removed from the sampling frame for all future surveys. This will increase the efficiency of subsequent surveys, as less time will be spent inspecting blocks that cannot be fished. Some selected blocks may

not have been fished but may also not have been rejected. This could occur when a temporary obstacle (e.g. trap fishing gear, another vessel, or strong tidal currents) prevents fishing, or when there was insufficient time available to fish a block without spending another day in the area, or if fishing was attempted and although the tow was not successful, the block was not rejected. These blocks would be considered unassessed at the end of the survey and have a final status of "block not fished but remains in sampling frame" or "not rejected but last attempt failed".

Fishing Data

The start and end positions, times, and bottom depths, as well as the direction, vessel speed, weather and environmental conditions, and warp length were recorded for every tow. In addition, global positioning system (GPS) data and bottom sounder data were logged continuously for the duration of the survey.

CATCH PROCESSING

At the end of each tow, the net was retrieved and the catch dumped into a hopper in a lab below the trawl deck. Catch was sorted by species into separate baskets as it moved along a conveyor system. The catch from all tows, including both useable and unusable tows was recorded. Unusable tows, although not sampled for biological data, were recorded to track catch amounts. Whenever possible, the catch was completely sorted and weighed. However, for large catches in excess of 2,000 kg or large numbers of small individuals, some method of total catch estimation and sub-sampling for species composition was conducted. The specific method of catch estimation and sub-sampling varied based on the total weight and volume of the catch being subsampled as well as the composition of the catch. Large catches were typically visually estimated, although volumetric estimates were sometimes used. In all cases a representative sample of the catch was sorted to determine species composition and to provide individuals for biological sampling.

Baskets of species were weighed to the nearest 0.02 kg using a motion-compensating electronic balance. For small catches the number of individuals was often recorded in addition to the weight. Weights less than 0.02 kg were recorded as trace amounts. Catch was sorted to the lowest taxonomic group possible. For most fishes this was to the level of species although small and fragile species such as snailfish, lantern fish, or young-of-the-year rockfish may have only been identified to genus or family. In some cases a few representative individuals may have been frozen for later identification. Invertebrates may have only been identified to phylum or order.

BIOLOGICAL SAMPLING

While the primary purpose of the survey was to generate fishery-independent indices of relative abundance, the secondary goal was to collect biological information to characterize the size, sex, and age-composition of each species caught. Two types of biological samples were conducted: "Length" samples, consisting of individual fish length and sex, and "Age" samples, consisting of length, sex, weight, maturity, and age structure. In an effort to maintain a manageable workload, each species had a minimum catch level that had to be exceeded in the tow before biological samples would be

collected. For rare species or species of special conservation concern the minimum number could be one fish, whereas for common and abundant species the number might be 25 or 50. The choice of the species to collect age samples from depended on the size of the catch of the species and the "desirability" of the species. The size of the catch was considered because the intent was to collect age structures from the largest catches of each species in each stratum over the survey. The "desirability" of the species was based on any conservation concerns and whether or not the species is commercially exploited. Biological samples were typically not collected from unusable tows.

Starting in 2014, the sampling protocols for the synoptic bottom trawl surveys adopted the first significant changes since 2009. Prior to 2014, the protocol focused on collecting as many biological samples for as many species as possible and was spread out to provide a synoptic view of the species biology throughout the survey areas. The protocol used for 2014 focused the sampling effort on species of commercial importance and species where the survey was likely to provide useful abundance indices. This was achieved through the introduction of relative catch weight ranking for each species in a tow to be used with the previously established species ranking system. In addition, the sample size was decreased from a target of 50 fish per sample to 25 fish in an effort to sample more species in a tow. 2015 was the first year that these changes were used in the QCS synoptic bottom trawl survey.

Individual fish were measured to fork length, total length, standard length or other length depending on the species. Length measurements were collected to the nearest 1 cm for length samples, and 0.5 cm for age samples using an electronic fish measuring board. Fish were weighed using a motion-compensating electronic balance. Measurements were to the nearest 1, 2, or 5 grams depending on the size of the fish as well as the model and weight range of the scale in use.

There are a variety of hard parts of a fish that can be used to determine the age of the fish (Chilton and Beamish 1982). The specific structure that provides the most accurate and efficient estimate of age varies by species but all the structures have the common trait of a series of annular rings that can be counted. Sagittal otoliths (calcareous accretions of the inner ear) were collected from rockfish and flatfish species while fin rays were taken from Walleye Pollock (*Theragra chalcogramma*), Lingcod (*Ophiodon elongates*) and Pacific Cod (*Gadus macrocephalus*). Dorsal spines were collected from North Pacific Spiny Dogfish (*Squalus suckleyi*). All age samples collected on this survey were submitted to the Sclerochronology Lab located at the Pacific Biological Station in Nanaimo, BC for storage and future analysis. In addition to the biological sampling described above, specific data, specimens or tissue samples are routinely collected following requests from other institutions or researchers. In 2015, tissue for DNA analysis was collected from Eulachon (*Thaleichthys pacificus*), Yelloweye Rockfish (*Sebastes ruberrimus*) and Quillback Rockfish (*Sebastes maliger*) as well as tissue for DNA analysis from Blackspotted (*Sebastes melanostictus*) /Rougheye Rockfish (*Sebastes aleutianus*).

Until the mid-2000s, Rougheye Rockfish (*Sebastes aleutianus*) was considered to be a single, highly variable species with light and dark colour morphs. Genetic and morphological analysis has since confirmed that there are two distinct species (Orr and Hawkins 2008): Rougheye Rockfish (*S. aleutianus*) and Blackspotted Rockfish (*S.*

melanostictus). Historical biological and catch information for *S. aleutianus* must now be considered to be the aggregate of both species. During the 2008 WCHG survey an attempt was made to differentiate between the two species. That preliminary work showed that the two species cannot be reliably distinguished in the field because the morphological characteristics overlap. Further, there is evidence that the two species hybridize (Gharrett et al. 2005). Given that the historical data is recorded as *S. aleutianus* and that attempting to separate the species at the catch level is both time consuming and unreliable, beginning with the 2010 WCHG survey, biological samples were collected from every catch that included both a visual assessment of the species (*S. aleutianus* or *S. melanostictus*) as well as a tissue sample for genetic confirmation of the species. The survey catch data, which continues to be recorded as *S. aleutianus*, can then be partitioned into the two species using either the visual assessment or the results of genetic analyses. We do not attempt to partition the catch data for this report.

NET-MOUNTED SENSORS AND DATA RECORDERS

The F/V Frosti was equipped with a Marport trawl mensuration system. Sensors attached to the net use acoustic signals to communicate with each other and the vessel and provide real-time net geometry including headline height and depth, as well as doorspread which is used to calculate swept area. The Scanmar output was logged continuously during the survey and monitored in real-time during fishing operations.

A Mac Marine Industries Bottom Contact Sensor (BCS) was attached to the footrope to record contact with the sea floor. The BCS consists of a pressure housing with an Onset Hobo data recorder in a stainless steel sled that trails behind the footrope. The Hobo recorder measures acceleration in three axes which can then be converted into angles. The recorder is mounted in the sled such that the x-axis tilt indicates the angle of the steel sled. When the footgear contacts the bottom, the sled angle is approximately 80 degrees. When the footrope is off the bottom, the sled hangs down and the angle is approximately 40 degrees. These data are used to determine the exact times in each tow that the trawl net first and last contacted the sea floor, thus providing an accurate measure of total bottom contact time. The Hobo recorder was activated prior to the first tow of the day and downloaded at the end of each day.

A Seabird SBE39 temperature and pressure recorder (TDR) was attached to the starboard wing of the trawl. A Seabird SBE19plus recorder (CTD) equipped with a SBE43 dissolved oxygen sensor was attached to the center of the headline. The SBE19plus recorded conductivity, temperature and pressure data with derived values for salinity (Seabird 1989) and depth (Seabird 2002). The SBE43 recorded oxygen voltage output data with calculated values for dissolved oxygen (ml/l) using temperature, pressure, and salinity data (Seabird 2012). The SBE39 was activated prior to the first tow of the day and turned off after the last tow of the day, while the SBE19plus and SBE43 were turned on and off manually before and after each tow. Both the SBE39 and SBE19plus were downloaded at the end of each day.

DATA RECORDING

All the fishing, catch, and biological data were recorded directly into a Microsoft SQL server database through a Microsoft Access interface. Details of the electronic data acquisition system used for this survey can be found in Olsen (2010).

All the data from the survey are archived in an Oracle relational database called "GFBio", the Groundfish Biological Samples database maintained by the Groundfish Data Unit (Fisheries and Oceans Canada, Science Branch, Pacific Region) located at the Pacific Biological Station in Nanaimo, BC.

RESULTS

FISHING

The 2015 QCS synoptic bottom trawl survey was divided into two legs of two-two and a half weeks each. From a total of 34 survey days, two days were required for travel and loading at the start of the survey and one day at the end of the survey, two days were required for offloading catch and changing crews and one day was required for vessel repairs. Thus, there was a total of approximately 28 full fishing days (Table 3).

From a total of 295 blocks selected for the 2015 survey, 240 blocks were successfully fished, seven were rejected based on prior knowledge, 34 were rejected based on on-ground inspection and eight blocks were rejected after one or more failed fishing attempts, while six blocks remained unassessed (Table 4 and Figure 10).

A total of 251 tows, of which 240 were useable and 11 were not useable were completed during the 28 days that some fishing occured.

Table 5 shows tow results by stratum for this survey. The scope (ratio of warp length to bottom depth) used for tows in 2015 is shown in Table 6 and Figure 11. Complete information for each tow including date, duration, location, average depth, average speed, warp, total catch weight and usability is presented in Appendix A.

CATCH

A total of 90,986 kg of fish and invertebrates was caught during the 2015 QCS survey. The total catch weight for useable tows was typically less than 1,000 kg per tow, and averaged 379 kg per useable tow (Figure 12). The majority of the catch (87,297 kg, 96%) consisted of 107 different species of fish, including 31 rockfish and 12 flatfish species. The remainder (3,689 kg) consisted of 122 invertebrate groups. The average number of species identified in useable tows was 24 with the minimum species count being seven and the maximum count being 41 per tow (Figure 13). The frequency of occurrence, maximum catch weight, mean catch weight per tow and total survey catch weight of each species are shown in Table 7. Of the fish species caught, Arrowtooth Flounder (*Atheresthes stomias)*, was the most dominant by weight, followed by Pacific Ocean Perch (*Sebastes alutus,)*, Silvergray Rockfish (*Sebastes brevispinus)* Rex Sole (*Glyptocephalus zachirus*) and Walleye Pollock (*Gadus chalcogrammu*). Catch weights by tow for the 50 most commonly encountered species in this survey are included in Appendix B.

Commercially marketable fish were retained and sold with the proceeds going to the Canadian Groundfish Research and Conservation Society (Table 8).

BIOLOGICAL SAMPLING

Biological samples were collected from a total of 28,686 individuals of 46 species of fish. The number of samples and recorded biological attributes per species is shown in Table 9. A summary of the biological data collected for each species is shown in Table 10.

NET-MOUNTED SENSORS AND DATA RECORDERS

Net mensuration and doorspread information was collected using Marport net sensors. Net headrope to bottom distance was collected from 250 tows, net depth from 239 tows and door spread information from 251 tows (Table 11).

Seabird SBE39 data (water temperature and depth) were collected from 250 tows while Seabird SBE19plus and SBE43 data (conductivity, water temperature, depth, and dissolved oxygen) were collected from 219 tows (Table 11and Figure 14).

BCS data were collected from 240 tows (Table 11). An example of data collected by the BCS is show in Figure 15.

Global positioning system (GPS) data and bottom sounder data are available for all 251 tows.

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Table 1. 2015 synoptic bottom trawl survey design showing block allocation per stratum based on the target allocation and the combined predicted failure and revisit rates (predicted adjustment).

Area	Depth Stratum (m)	Target Tows	Predicted Adjustment	Total Block Allocation
South	50 - 125	32	0.20	40
	125 - 200	63	0.14	73
	200 - 330	27	0.21	354
	330 - 500	8	0.11	9
North	50 - 125	11	0.48	21
	125 - 200	49	0.20	61
	200 - 330	43	0.10	48
	330 - 500	7	0.22	9
Total		**240**		**295**

Table 2. Atlantic Western IIa box trawl net specifications on the 2015 QCS synoptic bottom trawl survey.

Component	Dimension
Wings, square, and bottom belly netting	combination of 5 inch double strand 4.5mm Euroline Premium and 5 inch single strand 3.5 mm Euroline Premium
Belly netting	4 ½ inch single strand 3.5mm Euroline Premium
Lengthening piece netting	4 ½ inch single strand 4.5 mm Euroline Premium
Codend netting	4 inch double 5 mm orange braided polyethylene
Codend liner	½ inch 210/20 knotless nylon
Floats	8 inch diameter center hole rated to 2000 m
Net frame chain	11 mm long link (64 mm inner length) grade 80 steel chain
Net frame rope	1 inch 3-strand twisted Polysteel
Net frame rope to chain lashing	3/8 inch 3-strand twisted Esterpro
Riblines	1 ¼ inch 3-strand twisted Polysteel
Footgear bosom	16 inch diameter tires (worn 18 inch aircraft tires)
Rubber spacers	4 inch, 5 inch, and 6 inch diameter disks cut from tires
Footgear wing center chain	16 mm mid link (65 mm inner length) grade 80 steel chain
Footgear wing top chain	11 mm long link (64 mm inner length) grade 80 steel chain
Rockhopper disk	16 inch diameter
Solid rubber bunt bobbin with steel tube center	16 inch diameter by 10 inch
Steel toggles	5 inch diameter by 3 inch long with 13 inches of chain (from center of toggle)

Table 3. Summary of operations during the 2015 QCS synoptic bottom trawl survey.

	Fishing				Tows			
Date	Start	End	Hours	Blocks Assessed	Useable	Not Useable	Total	Notes
07/06/2015	-	-	-	-	-	-	-	load, set-up and travel
07/07/2015	-	-	-	-	-	-	-	travel
07/08/2015	6:02	20:08	14	9	9	0	9	
07/09/2015	5:56	21:11	16	11	10	0	10	
07/10/2015	6:10	20:36	14	12	8	0	8	
07/11/2015	5:52	21:01	16	12	12	0	12	
07/12/2015	6:04	20:31	14	11	11	0	11	
07/13/2015	18:04	20:59	2	3	3	0	3	offload and engine inspection
07/14/2015	5:59	20:54	15	10	10	0	10	
07/15/2015	6:01	21:00	15	10	9	0	9	
07/16/2015	5:57	21:05	16	12	10	0	10	
07/17/2015	5:58	20:55	15	12	10	1	11	
07/18/2015	6:14	20:07	14	13	9	0	9	
07/19/2015	9:19	20:59	11	9	8	0	8	
07/20/2015	-	-	-	-	-	-	-	offload and crew change
07/21/2015	6:25	20:17	14	9	9	0	9	
07/22/2015	6:18	20:24	14	10	10	0	10	
07/23/2015	6:37	21:15	15	11	11	0	11	
07/24/2015	6:24	20:16	14	10	10	0	10	
07/25/2015	6:28	20:54	14	10	10	0	10	
07/26/2015	6:17	18:57	12	10	9	1	10	
07/27/2015	-	-	-	-	-	-	-	offload
07/28/2015	6:25	11:59	5	4	4	0	4	travel
07/29/2015	-	-	-	-	-	-	-	vessel repairs
07/30/2015	6:26	20:15	14	11	10	0	10	
07/31/2015	7:26	20:11	13	8	7	1	8	
08/01/2015	6:35	20:22	14	16	11	1	12	
08/02/2015	7:04	20:30	13	12	9	1	10	
08/03/2015	6:36	19:08	13	13	8	1	9	
08/04/2015	-	-	-	-	-	-	-	offload and crew change
08/05/2015	7:27	18:49	11	10	7	1	8	
08/06/2015	6:52	20:31	14	12	4	3	7	
08/07/2015	6:48	17:04	11	10	4	0	4	
08/08/2015	6:40	18:10	12	9	8	1	9	
Total				**289**	**240**	**11**	**251**	
Average Per Day				**10**	**9**	**0**	**9**	

Table 4. Block results by stratum for the 2015 QCS synoptic bottom trawl survey.

Area	Depth Stratum (m)	Successful	Rejected Prior	Rejected Inspected	Rejected Failed	Not Assessed	Total
South	50 - 125	30	2	1	2	5	40
	125 - 200	65	3	5	0	0	73
	200 - 330	26	0	6	2	0	34
	330 - 500	4	0	4	1	0	9
North	50 - 125	12	0	8	1	0	21
	125 - 200	50	2	7	2	0	61
	200 - 330	45	0	3	0	1	48
	330 - 500	8	0	0	0	1	9
Total		**240**	**7**	**34**	**8**	**6**	**295**

Table 5. Tow results by stratum for the 2015 QCS synoptic bottom trawl survey.

Area	Depth Stratum (m)	Useable	Not Useable
South	50 - 125	30	2
	125 - 200	65	0
	200 - 330	27	2
	330 - 500	4	2
North	50 - 125	12	1
	125 - 200	50	2
	200 - 330	44	1
	330 - 500	8	1
Total		**240**	**11**

Table 6, Mean warp length and scope by 50 meter depth interval for the 2015 QCS synoptic bottom trawl survey.

Depth (m)	Mean Warp (m)	Mean Scope
50-100	247	3.11
100-150	345	2.66
150-200	427	2.50
200-250	569	2.49
250-300	708	2.56
300-350	767	2.41
350-400	978	2.55
400-450	1029	2.47
450-500	1280	2.58

Table 7. Frequency of occurrence, maximum catch weight, mean catch weight per tow, and total survey catch weight of each species captured during the 2015 QCS synoptic bottom trawl survey. Trace amounts (<0.02 kg) are entered as -.

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Rockfishes	**Family Scorpaenidae**				
Pacific Ocean Perch	*Sebastes alutus*	168	3729.59	120.31	19850.85
Silvergray Rockfish	*Sebastes brevispinis*	142	2500.00	66.14	9391.56
Redbanded Rockfish	*Sebastes babcocki*	106	254.56	10.68	1132.40
Shortspine Thornyhead	*Sebastolobus alascanus*	100	109.26	16.24	1608.20
Sharpchin Rockfish	*Sebastes zacentrus*	76	454.59	14.95	1091.31
Greenstriped Rockfish	*Sebastes elongatus*	66	89.56	6.29	415.21
Rougheye Rockfish	*Sebastes aleutianus*	61	775.22	30.52	1861.48
Redstripe Rockfish	*Sebastes proriger*	59	481.56	38.97	2299.43
Yellowtail Rockfish	*Sebastes flavidus*	51	444.62	47.47	2421.14
Yellowmouth Rockfish	*Sebastes reedi*	48	335.66	34.60	1660.68
Canary Rockfish	*Sebastes pinniger*	46	771.25	45.80	2106.57
Splitnose Rockfish	*Sebastes diploproa*	46	233.01	10.71	492.60
Rosethorn Rockfish	*Sebastes helvomaculatus*	34	13.94	2.27	77.02
Darkblotched Rockfish	*Sebastes crameri*	28	9.27	1.15	32.11
Yelloweye Rockfish	*Sebastes ruberrimus*	26	20.82	6.63	172.48
Widow Rockfish	*Sebastes entomelas*	23	134.48	10.00	230.00
Quillback Rockfish	*Sebastes maliger*	22	21.04	3.53	77.64
Pygmy Rockfish	*Sebastes wilsoni*	17	9.03	0.95	16.23
Rockfishes	*Sebastes* (Genus)	16	0.20	0.12	0.35
Shortraker Rockfish	*Sebastes borealis*	12	73.04	18.76	225.16
Harlequin Rockfish	*Sebastes variegatus*	7	0.64	0.24	1.69
Bocaccio	*Sebastes paucispinis*	6	6.04	4.58	27.50
Aurora Rockfish	*Sebastes aurora*	3	14.02	7.85	23.55
Longspine Thornyhead	*Sebastolobus altivelis*	3	15.20	6.15	18.46
Shortbelly Rockfish	*Sebastes jordani*	3	0.44	0.24	0.73
Copper Rockfish	*Sebastes caurinus*	2	6.48	3.73	7.45
Blackgill Rockfish	*Sebastes melanostomus*	2	0.47	0.31	0.62
Dusky Rockfish	*Sebastes variabilis*	1	1.04	1.04	1.04
China Rockfish	*Sebastes nebulosus*	1	0.72	0.72	0.72
Tiger Rockfish	*Sebastes nigrocinctus*	1	0.38	0.38	0.38
Stripetail Rockfish	*Sebastes saxicola*	1	0.30	0.30	0.30
Flatfishes	**Order Pleuronectiformes**				
Arrowtooth Flounder	*Atheresthes stomias*	231	2578.25	86.58	19999.60
Rex Sole	*Glyptocephalus zachirus*	206	138.27	13.35	2735.76
Dover Sole	*Microstomus pacificus*	172	219.16	15.84	2724.42
Slender Sole	*Lyopsetta exilis*	109	5.40	0.70	71.13
Flathead Sole	*Hippoglossoides elassodon*	95	363.68	19.65	1846.89
Pacific Halibut	*Hippoglossus stenolepis*	91	244.44	12.34	1122.67
Petrale Sole	*Eopsetta jordani*	83	20.63	3.82	313.00
English Sole	*Parophrys vetulus*	80	101.76	9.82	785.49
Southern Rock Sole	*Lepidopsetta bilineata*	36	125.54	9.76	351.41
Pacific Sanddab	*Citharichthys sordidus*	23	166.55	15.98	351.48
Curlfin Sole	*Pleuronichthys decurrens*	8	1.38	0.58	4.63
Deepsea Sole	*Embassichthys bathybius*	1	1.48	1.48	1.48
Cod-Like Fishes	**Order Gadiformes**				
Walleye Pollock	*Gadus chalcogrammus*	161	462.92	18.58	2731.06
Pacific Cod	*Gadus macrocephalus*	133	505.52	12.91	1639.33
Pacific Hake	*Merluccius productus*	65	221.66	21.08	1327.78

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Pacific Tomcod	*Microgadus proximus*	6	1.41	0.72	4.31
Cartilaginous Fishes	**Class Chondrichthyes**				
Spotted Ratfish	*Hydrolagus colliei*	207	176.48	6.36	1309.91
North Pacific Spiny Dogfish	*Squalus suckleyi*	107	77.89	5.41	578.36
Longnose Skate	*Raja rhina*	64	34.79	8.94	563.36
Sandpaper Skate	*Bathyraja interrupta*	17	2.78	1.06	18.08
Big Skate	*Beringraja binoculata*	5	42.50	15.45	77.26
Aleutian Skate	*Bathyraja aleutica*	2	7.00	5.01	10.02
Greenlings	**Family Hexagrammidae**				
Lingcod	*Ophiodon elongatus*	51	56.44	7.38	376.59
Kelp Greenling	*Hexagrammos decagrammus*	2	1.03	0.71	1.41
Sculpins	**Family Cottidae**				
Darkfin Sculpin	*Malacocottus zonurus*	42	1.10	0.26	6.77
Threadfin Sculpin	*Icelinus filamentosus*	19	3.74	0.86	16.39
Slim Sculpin	*Radulinus asprellus*	17	-	-	-
Tadpole Sculpin	*Psychrolutes paradoxus*	11	-	-	-
Spotfin Sculpin	*Icelinus tenuis*	5	-	-	-
Bigmouth Sculpin	*Hemitripterus bolini*	5	7.00	4.44	22.22
Brown Irish Lord	*Hemilepidotus spinosus*	2	0.22	0.21	0.42
Roughspine Sculpin	*Triglops macellus*	2	-	-	-
Roughback Sculpin	*Chitonotus pugetensis*	1	0.08	0.08	0.08
Dusky Sculpin	*Icelinus burchami*	1	0.01	0.01	0.01
Sailfin Sculpin	*Nautichthys oculofasciatus*	1	-	-	-
Soft Sculpin	*Psychrolutes sigalutes*	1	-	-	-
Spinyhead Sculpin	*Dasycottus setiger*	1	-	-	-
Thornback Sculpin	*Paricelinus hopliticus*	1	-	-	-
Eelpouts	**Family Zoarcidae**				
Blackbelly Eelpout	*Lycodes pacificus*	78	31.74	4.48	259.85
Black Eelpout	*Lycodes diapterus*	35	3.46	0.43	8.16
Bigfin Eelpout	*Lycodes cortezianus*	32	1.15	0.40	12.41
Wattled Eelpout	*Lycodes palearis*	10	0.89	0.25	2.22
Pallid Eelpout	*Lycodapus mandibularis*	8	0.11	0.04	0.24
Shortfin Eelpout	*Lycodes brevipes*	4	0.16	0.11	0.34
Lanternfishes	**Family Myctophidae**				
Lanternfish	*Tarletonbeania* (Genus)	19	0.13	0.04	0.19
California Headlightfish	*Diaphus theta*	15	0.02	0.02	0.02
Blue Lanternfish	*Tarletonbeania crenularis*	5	-	-	-
Lanternfishes	Myctophidae (Family)	1	-	-	-
Northern Lampfish	*Stenobrachius leucopsarus*	1	-	-	-
Other Fish					
Sablefish	*Anoplopoma fimbria*	137	114.52	16.77	2280.93
Eulachon	*Thaleichthys pacificus*	74	46.34	3.54	254.62
Bigeye Poacher	*Bathyagonus pentacanthus*	40	0.20	0.07	0.81
Pacific Herring	*Clupea pallasii*	20	1.56	0.51	9.17
Pacific Viperfish	*Chauliodus macouni*	12	0.08	0.04	0.20
Pacific Sand Lance	*Ammodytes personatus*	10	76.17	10.28	82.27
Black Hagfish	*Eptatretus deani*	9	0.56	0.26	1.81
Pacific Lamprey	*Entosphenus tridentatus*	9	0.08	0.04	0.31
Northern Ronquil	*Ronquilus jordani*	9	0.02	0.02	0.04
Snake Prickleback	*Lumpenus sagitta*	9	-	-	-
Prowfish	*Zaprora silenus*	7	7.88	2.15	8.59
Ragfish	*Icosteus aenigmaticus*	6	0.36	0.20	0.78
Blacktail Snailfish	*Careproctus melanurus*	5	0.78	0.42	2.10
Smalldisk Snailfish	*Careproctus gilberti*	5	0.02	0.02	0.02

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Snailfishes	Liparidae (Family)	4	-	-	-
Chum Salmon	*Oncorhynchus keta*	3	3.78	3.34	10.02
American Shad	*Alosa sapidissima*	3	0.68	0.44	1.33
Northern Spearnose Poacher	*Agonopsis vulsa*	3	0.10	0.10	0.10
Poachers	Agonidae (Family)	3	0.02	0.02	0.02
Pearly Prickleback	*Bryozoichthys marjorius*	2	0.04	0.04	0.04
Smootheye Poacher	*Xeneretmus leiops*	2	0.04	0.04	0.04
Tadpole Snailfish	*Nectoliparis pelagicus*	2	-	-	-
Wolf Eel	*Anarrhichthys ocellatus*	1	3.13	3.13	3.13
Giant Wrymouth	*Cryptacanthodes giganteus*	1	2.21	2.21	2.21
Northern Pearleye	*Benthalbella dentata*	1	-	-	-
Sturgeon Poacher	*Podothecus accipenserinus*	1	-	-	-
Whitebarred Prickleback	*Poroclinus rothrocki*	1	-	-	-
Crabs and Shrimp	**Class Malacostraca**				
Pink Shrimp (Smooth)	*Pandalus jordani*	131	50.56	4.31	318.65
Sidestripe Shrimp	*Pandalopsis dispar*	88	4.97	0.57	40.62
Prawn	*Pandalus platyceros*	76	1.92	0.50	36.13
Crangons	*Crangon* (Genus)	75	-	-	-
Isopods	Isopoda (Order)	35	-	-	-
Squat Lobster	*Munida quadrispina*	19	0.16	0.09	0.18
-	*Argis* (Genus)	18	-	-	-
Yellowleg Shrimp	*Pandalus tridens*	16	0.20	0.20	0.40
Glass Shrimp	*Pasiphaea pacifica*	15	2.74	1.81	7.22
Redclaw Crab	*Chorilia longipes*	13	0.12	0.12	0.12
-	*Eualus* (Genus)	13	-	-	-
Bluespot Shrimp	*Pandalus stenolepis*	7	-	-	-
Brown Box Crab	*Lopholithodes foraminatus*	6	18.57	4.00	24.00
Barbed Eualid	*Eualus barbatus*	6	-	-	-
Spike Shrimp (Horned Shrimp)	*Paracrangon echinata*	5	-	-	-
Golden King Crab	*Lithodes aequispinus*	4	3.32	2.20	8.80
-	*Euphausia* (Genus)	3	-	-	-
Bristly Crab	*Acantholithodes hispidus*	2	-	-	-
Graceful Decorator Crab	*Oregonia gracilis*	2	-	-	-
-	*Lithodes couesi*	1	0.74	0.74	0.74
Box Crabs	*Lopholithodes* (Genus)	1	0.62	0.62	0.62
Dungeness Crab	*Metacarcinus magister*	1	0.58	0.58	0.58
Inshore Tanner Crab	*Chionoecetes bairdi*	1	0.13	0.13	0.13
-	*Paralomis* (Genus)	1	0.11	0.11	0.11
Cancer Crabs	Cancridae (Family)	1	-	-	-
Large Eyed Eualid	*Eualus macropthalmus*	1	-	-	-
Lithodio Crabs	Lithodidae (Family)	1	-	-	-
Right-handed Hermits	Paguridae (Family)	1	-	-	-
Starfish	**Class Asteroidea**				
Mud Star	*Ctenodiscus crispatus*	31	2.66	0.46	4.18
Rose Starfish	*Crossaster papposus*	20	-	-	-
-	*Cheiraster dawsoni*	18	0.72	0.13	1.28
-	*Henricia* (Genus)	15	0.08	0.05	0.15
Sand Star	*Luidia foliolata*	13	0.38	0.27	2.71
-	*Poraniopsis inflatus inflatus* (Sub Species)	12	0.68	0.31	3.67
-	Echinasteridae (Family)	11	0.16	0.13	0.26
Spiny Red Sea Star	*Hippasteria spinosa*	10	0.43	0.18	1.66
Fish-eating Star	*Stylasterias forreri*	10	0.42	0.22	1.29
Cushion Star	*Pteraster tesselatus*	9	0.72	0.51	2.05
Cookie Star	*Ceramaster patagonicus*	6	0.24	0.13	0.39

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Vermillion Starfish	*Mediaster aequalis*	6	0.10	0.06	0.23
-	*Hippasteria* (Genus)	5	0.37	0.25	0.75
-	*Solaster* (Genus)	5	-	-	-
-	*Lophaster* (Genus)	4	0.30	0.27	0.53
-	*Dipsacaster* (Genus)	3	0.14	0.14	0.14
Winged Sea Star	*Pteraster militaris*	2	0.16	0.16	0.31
Long-armed Sea Star	*Orthasterias koehleri*	2	0.15	0.15	0.15
Starfish	Asteroidea (Class)	2	-	-	-
-	*Leptychaster arcticus*	2	-	-	-
-	Pterasteridae (Family)	2	-	-	-
-	*Cheiraster* (Genus)	2	-	-	-
Sunflower Starfish	*Pycnopodia helianthoides*	1	0.96	0.96	0.96
-	*Diplopteraster multipes*	1	0.66	0.66	0.66
-	*Ceramaster* (Genus)	1	0.26	0.26	0.26
-	Goniasteridae (Family)	1	-	-	-
-	*Lophaster furcilliger vexator* (Sub Species)	1	-	-	-
-	*Pseudarchaster alascensis*	1	-	-	-
-	*Pteraster* (Genus)	1	-	-	-
-	*Solaster paxillatus*	1	-	-	-
Brittle Stars	**Class Ophiuroidea**				
-	*Ophiura sarsi*	36	0.14	0.07	0.33
Basket Star	*Gorgonocephalus eucnemis*	35	1.51	0.44	13.19
-	*Ophiacantha* (Genus)	16	-	-	-
-	*Ophiura* (Genus)	12	-	-	-
-	*Amphiophiura ponderosa*	3	0.04	0.03	0.06
-	Ophiuroidea (Class)	3	-	-	-
-	*Amphiophiura* (Genus)	2	-	-	-
-	Ophiuridae (Family)	1	-	-	-
Sea Cucumbers	**Class Holothuroidea**				
Whitespotted Sea Cucumber	*Parastichopus leukothele*	43	13.84	1.52	60.82
Soft Sea Cucumber	*Pseudostichopus mollis*	23	3.16	0.46	7.29
Papillose Sea Cucumber	*Synallactes challengeri*	13	1.00	0.20	1.38
Giant Red Sea Cucumber	*Parastichopus californicus*	5	0.83	0.62	3.10
Sea Cucumbers	Holothuroidea (Class)	2	0.04	0.04	0.04
Octopuses and Squid	**Class Cephalopoda**				
Pacific Bobtail Squid	*Rossia pacifica*	69	0.19	0.07	0.67
Schoolmaster Gonate Squid	*Berryteuthis magister*	59	26.94	4.00	227.88
Smoothskin Octopus	*Benthoctopus leioderma*	17	0.80	0.18	2.02
Opalescent Inshore Squid	*Doryteuthis opalescens*	5	0.84	0.45	1.34
Squids	Teuthida (Order)	5	-	-	-
Giant Pacific Octopus	*Enteroctopus dofleini*	4	6.66	2.47	9.88
Robust Clubhook Squid	*Moroteuthis robusta*	3	20.64	16.62	49.86
-	*Gonatus* (Genus)	2	0.25	0.25	0.25
-	*Stigmatoteuthis dofleini*	1	0.56	0.56	0.56
Sea Urchins	**Super Order Echinacea**				
Fragile Urchin	*Allocentrotus fragilis*	144	10.88	1.63	200.28
Pallid Urchin	*Strongylocentrotus pallidus*	14	0.28	0.16	1.44
Green Urchin	*Strongylocentrotus droebachiensis*	3	0.06	0.05	0.10
Red Urchin	*Strongylocentrotus franciscanus*	1	0.50	0.50	0.50
Jellyfish	**Class Scyphozoa**				
Lions Mane	*Cyanea capillata*	212	105.30	6.87	1422.20
Jellyfish	Scyphozoa (Class)	138	21.84	1.48	140.24
-	*Chrysaora* (Genus)	23	25.54	2.04	44.78
-	*Periphylla periphylla*	23	0.06	0.06	0.12

Common Name	Scientific Name	Number of Tows	Catch Weight (kg)		
			Max	Mean	Total
Moon Jelly	*Aurelia aurita*	15	2.95	0.59	8.25
-	*Periphylla* (Genus)	6	-	-	-
-	*Chrysaora melanaster*	1	1.72	1.72	1.72
Anemones	**Actiniaria (Order)**				
-	*Halipteris willemoesi*	28	0.47	0.18	2.82
Anemone	Actiniaria (Order)	23	0.68	0.22	2.21
-	*Primnoa* (Genus)	11	231.00	43.76	481.38
-	*Metridium* (Genus)	6	4.8	1.98	9.91
-	Hormathiidae (Family)	2	0.17	0.16	0.31
-	Isididae (Family)	1	0.13	0.13	0.13
-	*Paragorgia* (Genus)	1	1.06	1.06	1.06
Snails and Slugs	**Class Gastropoda**				
Oregontriton	*Fusitriton oregonensis*	19	0.21	0.12	0.74
Seaslugs	Nudibranchia (Order)	9	0.10	0.08	0.16
Gastropods	*Gastropoda (Class)*	5	-	-	-
-	Neptuneidae (Family)	2	0.09	0.09	0.09
California Armina	*Armina californica*	1	-	-	-
Northern Lacuna	*Lacuna vincta*	1	-	-	-
Other Invertebrate Species					
Sponges	Porifera (Phylum)	77	133.59	7.31	475.28
-	Tunicata (Sub Phylum)	43	1.14	0.74	1.47
Glass Sponges	Hexactinellida (Class)	29	29.43	3.90	97.56
Water Jellyfish	*Aequorea victoria*	20	6.26	2.45	31.83
Salps	Thaliacea (Class)	20	0.10	0.10	0.10
Heart Urchin	*Brisaster latifrons*	12	1.09	0.42	3.37
Sea Mouse	*Aphrodita* (Genus)	11	0.02	0.02	0.02
-	Antedonidae (Family)	11	-	-	-
Pink Scallop, (aka Reddish Scallop)	*Chlamys rubida*	8	0.88	0.45	1.78
Bath Sponges	Demospongiae (Class)	7	1.62	0.48	3.35
Peanutworms	Sipuncula (Phylum)	6	-	-	-
Fish Eggs		3	23.56	17.61	35.22
-	Flatworms (Phylum)	3	-	-	-
Polychaete Worms	Polychaeta (Class)	2	-	-	-
Lampshells	Brachiopoda (Phylum)	2	-	-	-
Calcareous Sponges	Calcarea (Class)	1	0.98	0.98	0.98
Scale Worms	*Polynoe* (Genus)	1	-	-	-
Spiny Scallop	*Chlamys hastata*	1	-	-	-
-	*Suberites (Genus)*	1	-	-	-

Table 8. Offloaded catch weight by species by the F/V Frosti during the 2015 QCS synoptic bottom trawl survey.

Species	Weight (kg)
Big Skate	47.1
Black Rockfish	3.6
Canary Rockfish	1,650.1
Copper Rockfish	1.3
Darkblotched Rockfish	11.1
Dover Sole	1,267.4
English Sole	215.8
Flathead Sole	1.3
Greenstriped Rockfish	62.2
Lingcod	15.1
Longnose Skate	341.4
Pacific Cod	302.3
Pacific Ocean Perch	18,229.5
Petrale Sole	69.3
Quillback Rockfish	16.4
Redbanded Rockfish	619.6
Redstripe Rockfish	1,794.8
Rex Sole	230.4
Rosethorn Rockfish	15.1
Rougheye/Blackspotted Rockfish	1,537.4
Sablefish	138.7
Sharpchin Rockfish	421.7
Shortraker Rockfish	4.4
Shortspine Thornyhead	971.8
Silvergray Rockfish	7,055.5
Southern Rock Sole	28.4
Splitnose Rockfish	12.0
Walleye Pollock	1,044.6
Widow Rockfish	140.3
Yelloweye Rockfish	1.8
Yellowmouth Rockfish	1,400.6
Yellowtail Rockfish	2,032.8
Total	**39,683.9**

Table 9. Species sampled during the 2015 QCS synoptic bottom trawl survey. The number of samples and number of recorded biological attributes are shown for each species.

Common Name	Scientific Name	Number of Samples	Number of Recorded Biological Attributes				
			Length	Weight	Sex	Maturity	Age
Aleutian Skate	*Bathyraja aleutica*	2	2	0	2	0	0
Arrowtooth Flounder	*Atheresthes stomias*	146	3805	3796	3805	1287	1291
Big Skate	*Beringraja binoculata*	5	12	9	12	0	0
Bocaccio	*Sebastes paucispinis*	6	6	6	6	6	6
Canary Rockfish	*Sebastes pinniger*	20	318	318	318	257	258
Darkblotched Rockfish	*Sebastes crameri*	2	31	31	31	0	0
Dover Sole	*Microstomus pacificus*	73	1660	1660	1660	627	626
English Sole	*Parophrys vetulus*	37	927	926	926	449	451
Eulachon	*Thaleichthys pacificus*	39	1043	0	0	0	0
Flathead Sole	*Hippoglossoides elassodon*	50	1654	1646	1654	134	134
Greenstriped Rockfish	*Sebastes elongatus*	24	513	511	513	24	24
Harlequin Rockfish	*Sebastes variegatus*	1	5	5	5	0	0
Lingcod	*Ophiodon elongatus*	32	89	88	89	31	31
Longnose Skate	*Raja rhina*	63	126	6	125	0	0
Longspine Thornyhead	*Sebastolobus altivelis*	2	45	45	45	0	29
North Pacific Spiny Dogfish	*Squalus suckleyi*	6	75	75	75	0	0
Pacific Cod	*Gadus macrocephalus*	77	965	964	965	778	778
Pacific Hake	*Merluccius productus*	26	462	462	462	76	76
Pacific Halibut	*Hippoglossus stenolepis*	90	214	6	9	0	0
Pacific Ocean Perch	*Sebastes alutus*	91	2249	2246	2249	1345	1344
Pacific Sanddab	*Citharichthys sordidus*	11	258	258	258	0	0
Pacific Tomcod	*Microgadus proximus*	1	18	18	18	0	0
Petrale Sole	*Eopsetta jordani*	27	279	279	279	161	161
Pygmy Rockfish	*Sebastes wilsoni*	4	103	103	86	0	0
Quillback Rockfish	*Sebastes maliger*	10	88	89	89	57	57
Redbanded Rockfish	*Sebastes babcocki*	45	495	495	495	330	332
Redstripe Rockfish	*Sebastes proriger*	23	491	491	491	321	320
Rex Sole	*Glyptocephalus zachirus*	113	3230	3225	3231	295	292
Rosethorn Rockfish	*Sebastes helvomaculatus*	12	155	154	155	0	0
Rougheye Rockfish	*Sebastes aleutianus*	57	332	332	332	330	332
Sablefish	*Anoplopoma fimbria*	76	1228	1227	1228	349	349
Sandpaper Skate	*Bathyraja interrupta*	17	19	3	19	0	0
Sharpchin Rockfish	*Sebastes zacentrus*	27	655	652	655	126	137
Shortbelly Rockfish	*Sebastes jordani*	1	8	8	8	0	0
Shortraker Rockfish	*Sebastes borealis*	11	39	39	39	39	39
Shortspine Thornyhead	*Sebastolobus alascanus*	68	1686	1683	1685	0	283
Silvergray Rockfish	*Sebastes brevispinis*	78	1362	1361	1362	770	770
Slender Sole	*Lyopsetta exilis*	14	321	321	321	0	0
Southern Rock Sole	*Lepidopsetta bilineata*	22	377	377	377	177	177
Splitnose Rockfish	*Sebastes diploproa*	9	212	212	212	0	0
Spotted Ratfish	*Hydrolagus colliei*	29	885	884	885	0	0
Walleye Pollock	*Gadus chalcogrammus*	68	1439	1348	1350	193	216
Widow Rockfish	*Sebastes entomelas*	5	67	67	67	32	32
Yelloweye Rockfish	*Sebastes ruberrimus*	25	60	60	60	60	60
Yellowmouth Rockfish	*Sebastes reedi*	14	282	282	282	193	194
Yellowtail Rockfish	*Sebastes flavidus*	23	396	396	396	232	232
Total		**1582**	**28686**	**27164**	**27331**	**8679**	**9031**

Table 10. Summary of biological data collected during the 2015 QCS synoptic bottom trawl survey. For each species the number of samples and specimens, the minimum, maximum, and mean length, the minimum, maximum, and mean weight, and female proportion is shown. Weights less than 0.1 kg are entered as <0.1 and no data collected is -.

Common Name	Scientific Name	Number of		Length Type	Length (cm)			Weight (kg)			Female Proportion
		Samples	Specimens		Min.	Max.	Mean	Min.	Max.	Mean	
Aleutian Skate	*Bathyraja aleutica*	2	2	Total	86	109	98	-	-	-	0.50
Arrowtooth Flounder	*Atheresthes stomias*	146	3805	Fork	12	71	34	<0.1	4.1	0.5	0.59
Big Skate	*Beringraja binoculata*	5	12	Total	54	171	80	1.1	4.1	2.4	0.33
Bocaccio	*Sebastes paucispinis*	6	6	Fork	66	78	71	3.9	6.0	4.5	0.33
Canary Rockfish	*Sebastes pinniger*	20	318	Fork	17	58	44	0.1	3.4	1.5	0.44
Darkblotched Rockfish	*Sebastes crameri*	2	31	Fork	22	32	27	0.2	0.6	0.4	0.77
Dover Sole	*Microstomus pacificus*	73	1660	Total	22	64	37	0.1	2.7	0.6	0.40
English Sole	*Parophrys vetulus*	37	927	Total	17	47	30	<0.1	1.0	0.3	0.51
Eulachon	*Thaleichthys pacificus*	39	1043	Standard	9	20	16	-	-	-	-
Flathead Sole	*Hippoglossoides elassodon*	50	1654	Total	10	40	28	<0.1	0.6	0.2	0.53
Greenstriped Rockfish	*Sebastes elongatus*	24	513	Fork	9	40	29	<0.1	1.0	0.3	0.54
Harlequin Rockfish	*Sebastes variegatus*	1	5	Fork	18	24	21	0.1	0.2	0.1	0.20
Lingcod	*Ophiodon elongatus*	32	89	Fork	45	96	69	0.6	8.4	3.4	0.72
Longnose Skate	*Raja rhina*	63	126	Total	7	132	83	0.3	4.8	2.1	0.65
Longspine Thornyhead	*Sebastolobus altivelis*	2	45	Total	11	29	23	<0.1	0.3	0.1	0.52
North Pacific Spiny Dogfish	*Squalus suckleyi*	6	75	Total	56	92	73	0.7	3.2	1.7	0.31
Pacific Cod	*Gadus macrocephalus*	77	965	Fork	8	88	42	<0.1	6.7	0.9	0.52
Pacific Hake	*Merluccius productus*	26	462	Fork	40	75	56	0.4	2.7	1.2	0.73
Pacific Halibut	*Hippoglossus stenolepis*	90	214	Fork	7	149	74	2.5	6.0	3.8	0.44
Pacific Ocean Perch	*Sebastes alutus*	91	2249	Fork	9	52	33	<0.1	2.0	0.7	0.48
Pacific Sanddab	*Citharichthys sordidus*	11	258	Total	7	32	21	<0.1	0.4	0.1	0.44
Pacific Tomcod	*Microgadus proximus*	1	18	Fork	16	26	20	<0.1	0.1	0.1	0.67
Petrale Sole	*Eopsetta jordani*	27	279	Total	24	61	39	0.1	3.1	0.8	0.36
Pygmy Rockfish	*Sebastes wilsoni*	4	103	Fork	9	25	14	<0.1	0.1	<0.1	0.38
Quillback Rockfish	*Sebastes maliger*	10	89	Fork	13	43	31	<0.1	1.6	0.7	0.55
Redbanded Rockfish	*Sebastes babcocki*	45	495	Fork	13	61	40	<0.1	4.5	1.3	0.47
Redstripe Rockfish	*Sebastes proriger*	23	491	Fork	11	42	29	<0.1	1.0	0.4	0.54
Rex Sole	*Glyptocephalus zachirus*	113	3231	Total	15	46	30	<0.1	0.8	0.2	0.44
Rosethorn Rockfish	*Sebastes helvomaculatus*	12	155	Fork	12	35	26	<0.1	0.7	0.3	0.45
Rougheye Rockfish	*Sebastes aleutianus*	57	332	Fork	8	64	37	<0.1	5.2	1.0	0.45
Sablefish	*Anoplopoma fimbria*	76	1228	Fork	31	90	46	0.2	8.8	1.1	0.46

Common Name	Scientific Name	Number of		Length	Length (cm)			Weight (kg)			Female
		Samples	Specimens	Type	Min.	Max.	Mean	Min.	Max.	Mean	Proportion
Sandpaper Skate	*Bathyraja interrupta*	17	19	Total	5	62	51	0.2	1.2	0.7	0.63
Sharpchin Rockfish	*Sebastes zacentrus*	27	655	Fork	8	39	21	<0.1	1.0	0.2	0.48
Shortbelly Rockfish	*Sebastes jordani*	1	8	Fork	17	20	18	<0.1	0.1	0.1	0.25
Shortraker Rockfish	*Sebastes borealis*	11	39	Fork	45	100	65	1.2	14.5	5.0	0.44
Shortspine Thornyhead	*Sebastolobus alascanus*	68	1686	Total	7	71	28	<0.1	6.2	0.3	0.47
Silvergray Rockfish	*Sebastes brevispinis*	78	1362	Fork	30	69	50	0.3	4.6	1.8	0.41
Slender Sole	*Lyopsetta exilis*	14	321	Total	10	33	21	<0.1	0.2	0.1	0.52
Southern Rock Sole	*Lepidopsetta bilineata*	22	377	Total	15	52	31	<0.1	1.8	0.5	0.74
Splitnose Rockfish	*Sebastes diploproa*	9	212	Fork	11	41	26	<0.1	1.1	0.3	0.41
Spotted Ratfish	*Hydrolagus colliei*	29	885	3rd Dorsal	8	49	26	<0.1	1.3	0.2	0.52
Walleye Pollock	*Gadus chalcogrammus*	68	1439	Fork	4	67	34	<0.1	2.4	0.5	0.66
Widow Rockfish	*Sebastes entomelas*	5	67	Fork	30	57	42	0.4	2.9	1.3	0.55
Yelloweye Rockfish	*Sebastes ruberrimus*	25	60	Fork	28	75	51	0.3	7.3	2.8	0.55
Yellowmouth Rockfish	*Sebastes reedi*	14	282	Fork	19	50	35	0.1	2.3	0.8	0.53
Yellowtail Rockfish	*Sebastes flavidus*	23	396	Fork	32	56	42	0.5	2.9	1.3	0.45

Table 11. Data collected from net sensors during the 2015 QCS bottom trawl survey, showing the number of tows from which each data type was collected (total number of survey tows is 251; 240 successful).

Sensor	Attribute	Number of Tows	
		Tows	Records
Hobo Pendant Acceleration Data Logger	Bottom Contact Sensor Tilt Angle	240	81398
Depth Sounder - Simrad	Bottom Depth	251	290140
Seabird SBE19plus Seacat Profiler	Conductivity Of Sea Water (S/m)	219	56283
	Pressure (db)/ depth (m)	219	56283
	Salinity (PSU)	219	56283
	Water temperature (°C)	219	56283
Seabird SSBE43	Oxygen Voltage (V)/ Dissolved Oxygen (ml/L)	219	56283
Seabird SBE39 Temperature And Pressure Sensor S/N	Pressure (db)/ depth (m)	250	59767
	Water Temperature (°C)	250	59767
Marport Net Sensors	Net Depth	239	113659
	Trawl Net Doorspread	251	24795
	Trawl Net Headrope To Bottom Distance	250	133678

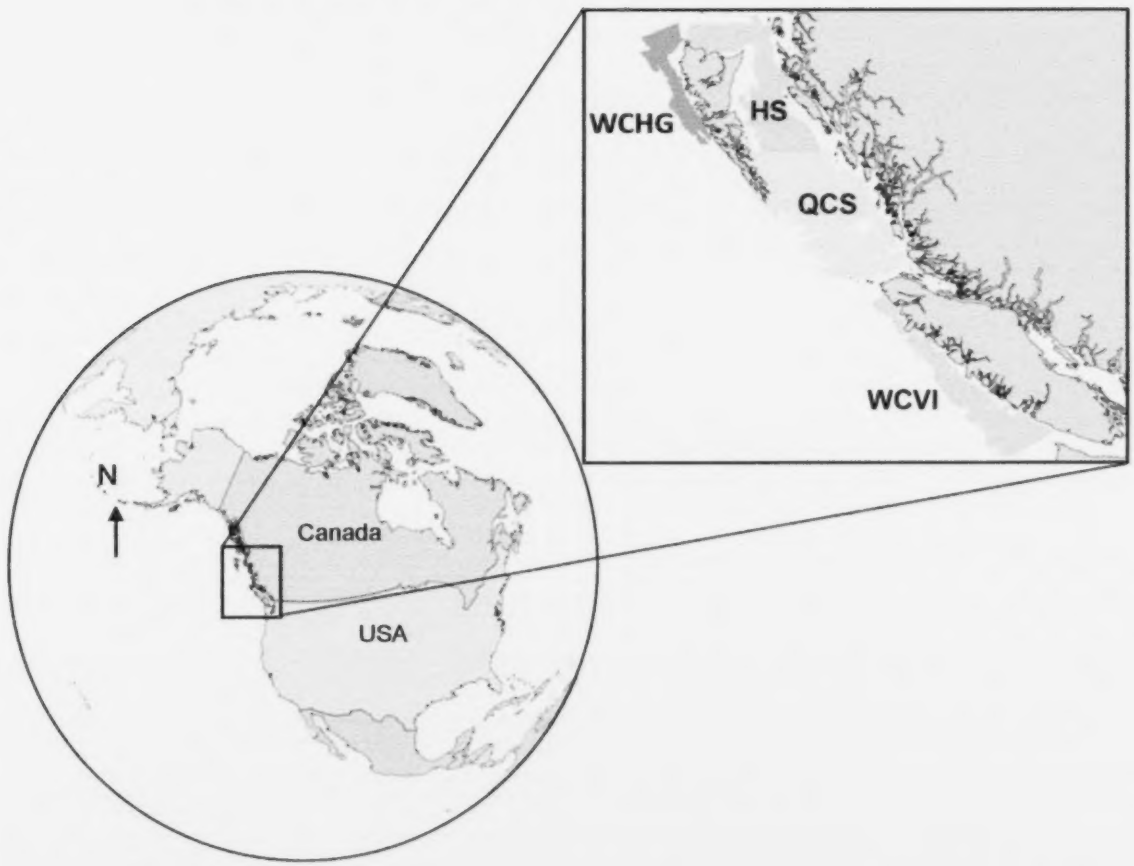

Figure 1. Locations of the current synoptic bottom trawl surveys on the coast of British Columbia, Canada. WCHG = West Coast Haida Gwaii; HS = Hecate Strait; QCS = Queen Charlotte Sound; WCVI = West Coast Vancouver Island.

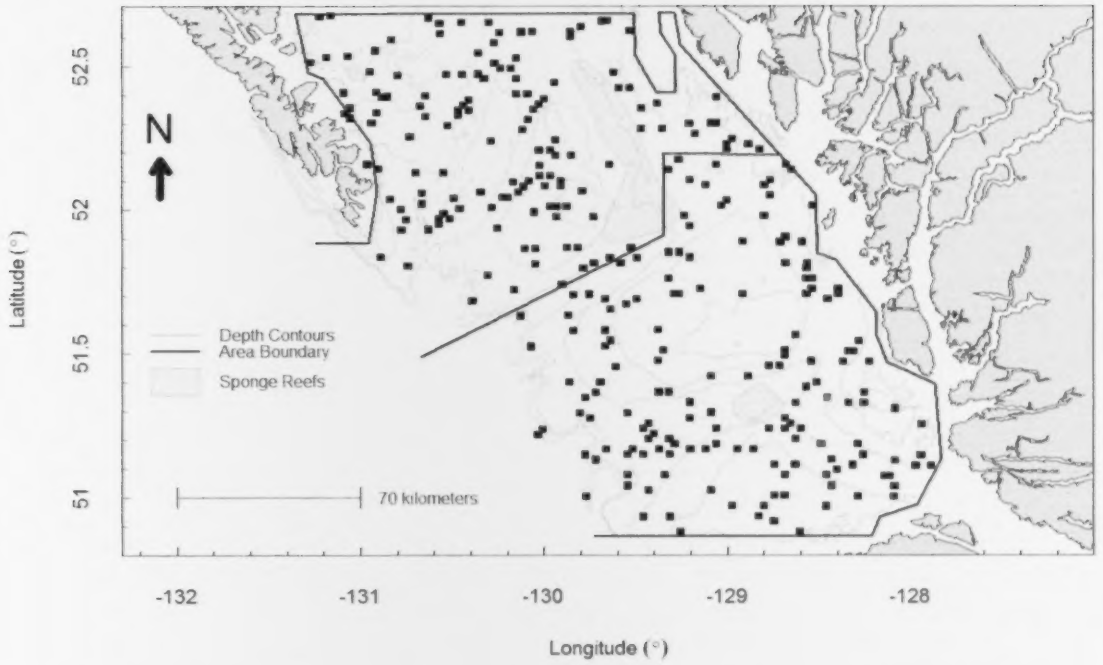

Figure 2. The QCS synoptic bottom trawl survey area showing the 295 randomly selected blocks with area boundary of the north and south subareas, sponge reef protected area, and depth contours for the 2015 survey.

Figure 3. The commercial stern trawler F/V Frosti used for the 2015 QCS synoptic bottom trawl survey.

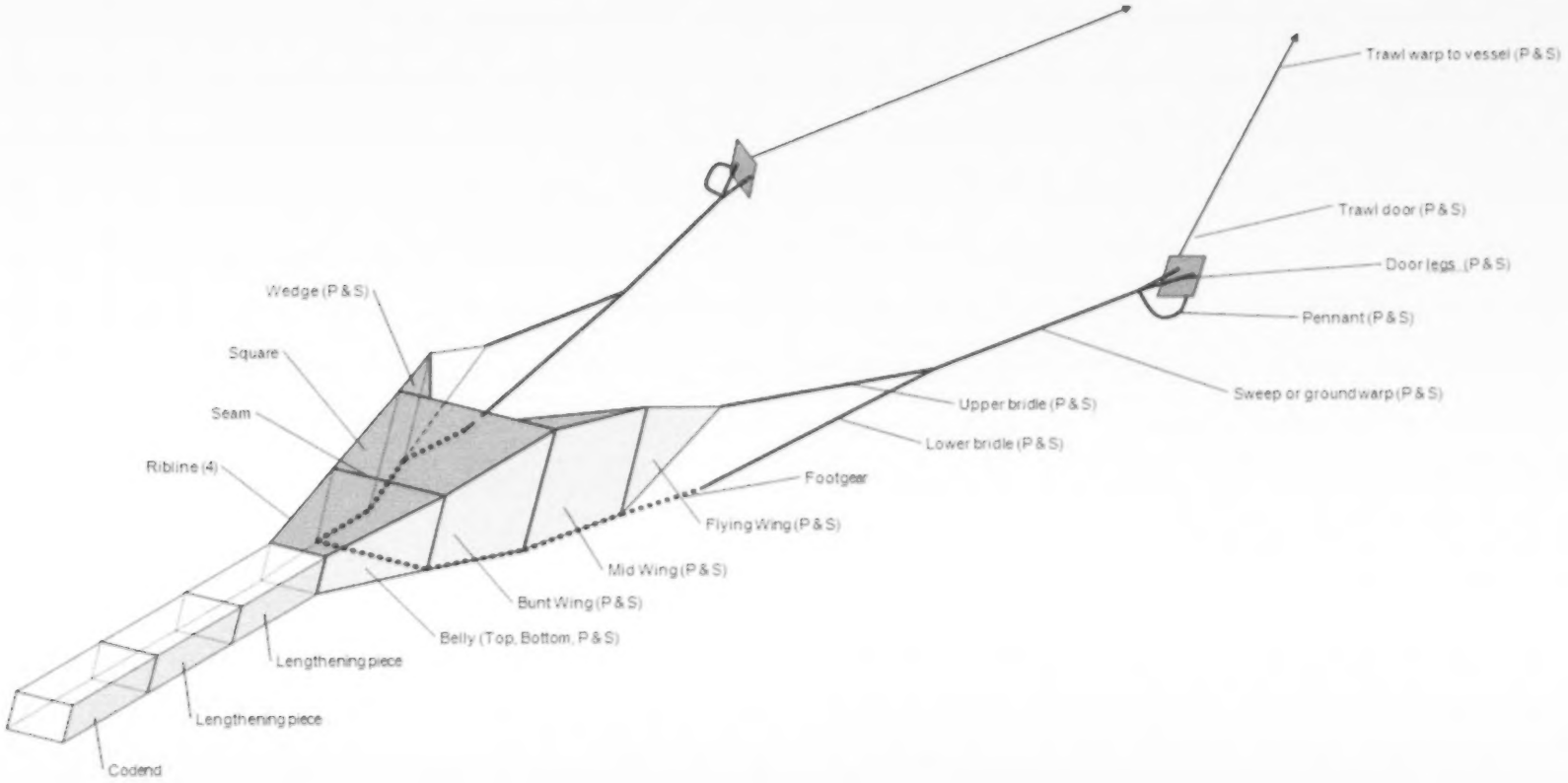

Figure 4. Overview diagram of the Atlantic Western IIa box trawl used on the 2015 QCS synoptic bottom trawl survey.

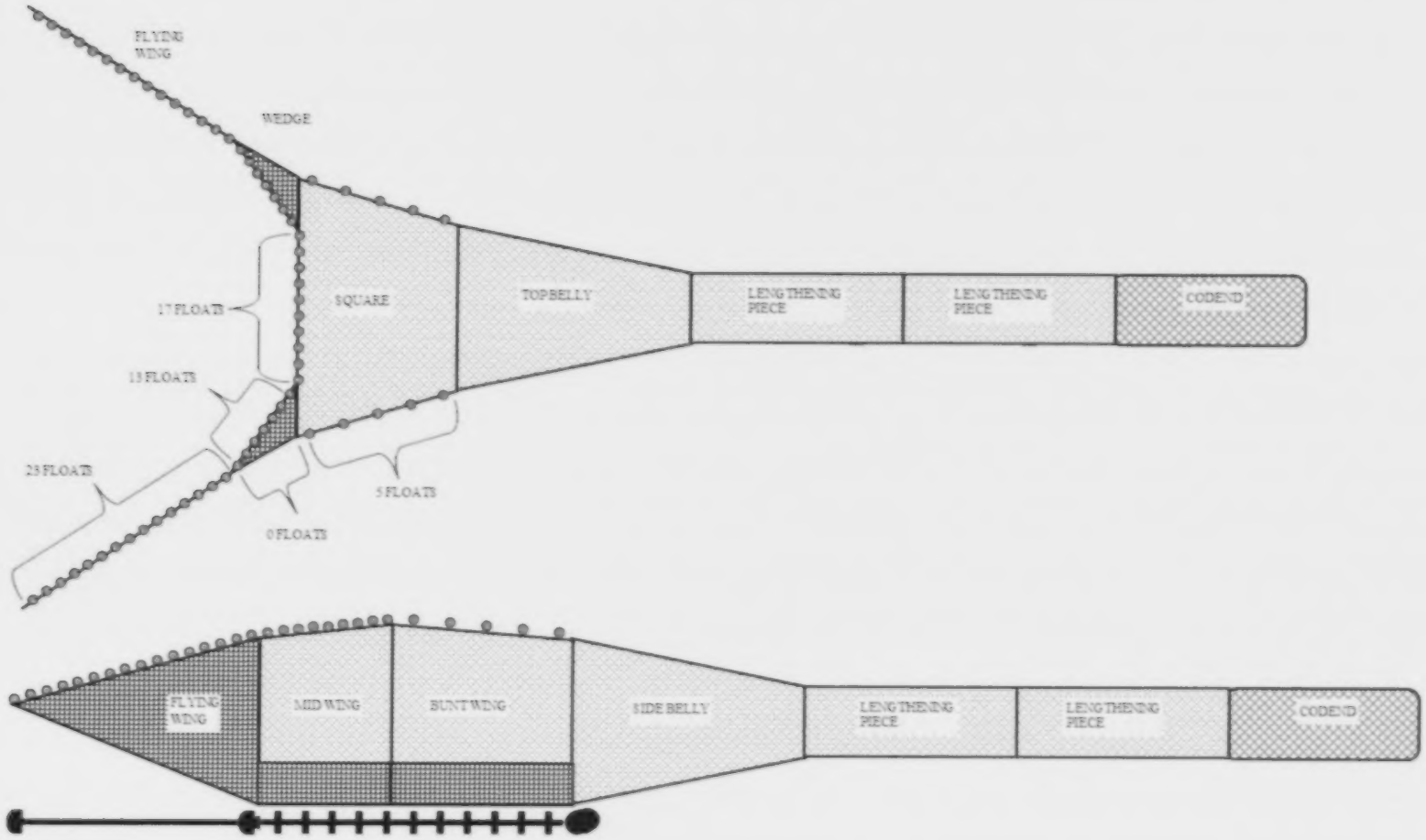

Figure 5. Top and side view of the Atlantic Western IIa box trawl used on the 2015 QCS synoptic bottom trawl survey.

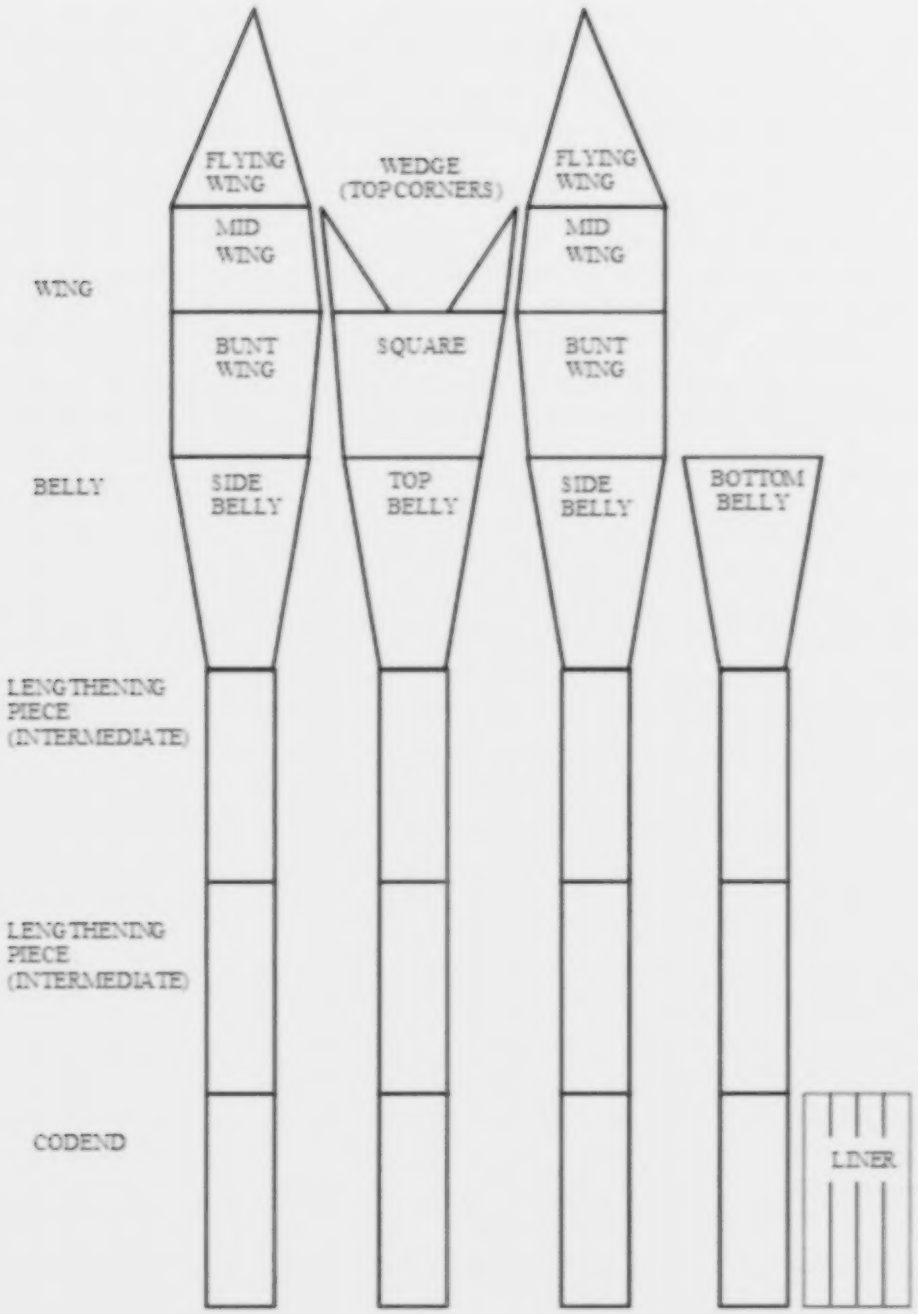

Figure 6. Diagram of the net panels with section names for the Atlantic Western IIa box trawl used on the 2015 QCS synoptic bottom trawl survey.

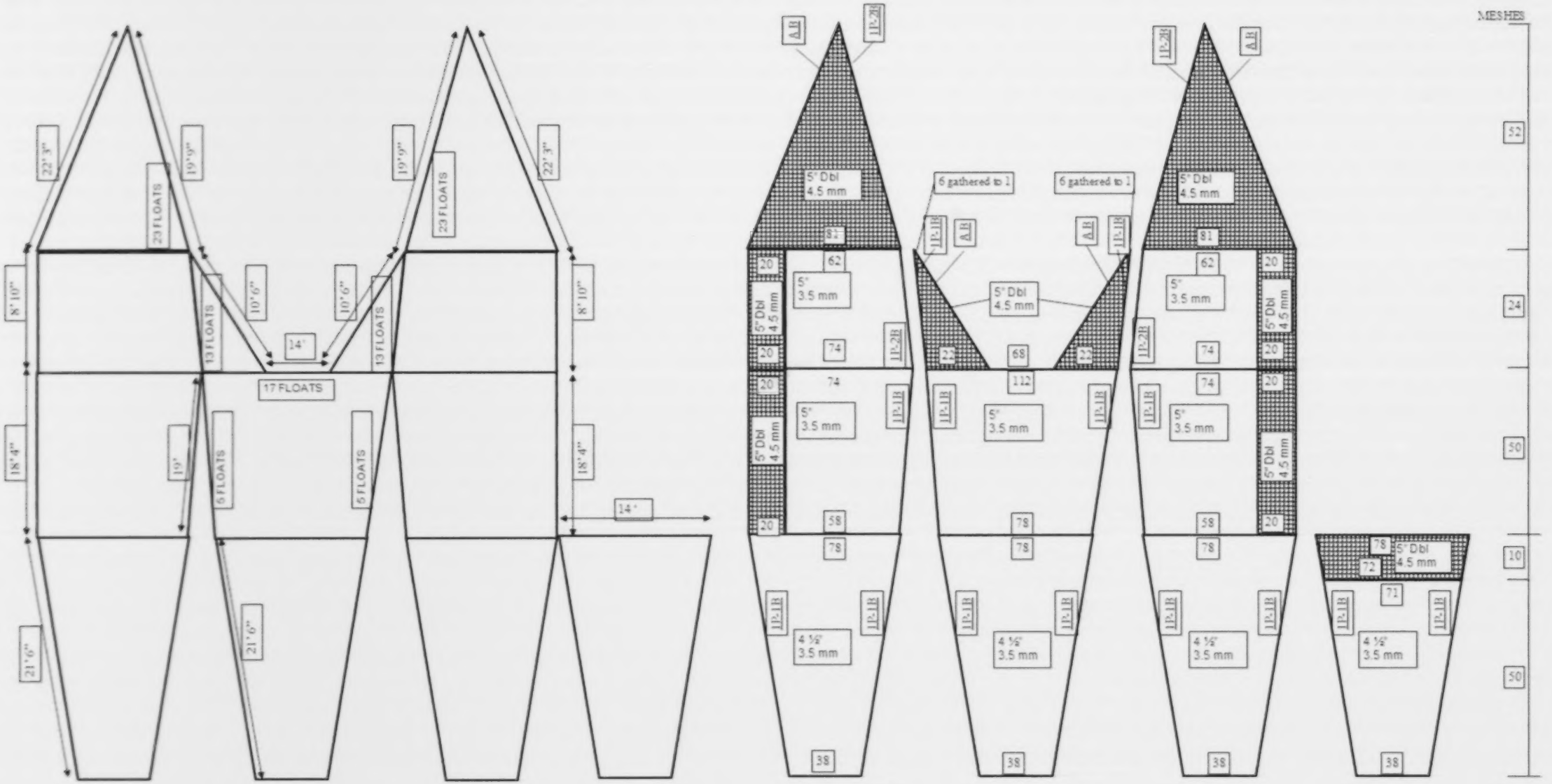

Figure 7. Schematics of the wing and belly sections of the Atlantic Western IIa box trawl used on the 2015 QCS synoptic bottom trawl survey. Dimensions and the float arrangement are shown on the left while netting details, mesh counts, and mesh cuts are shown on the right side of the diagram.

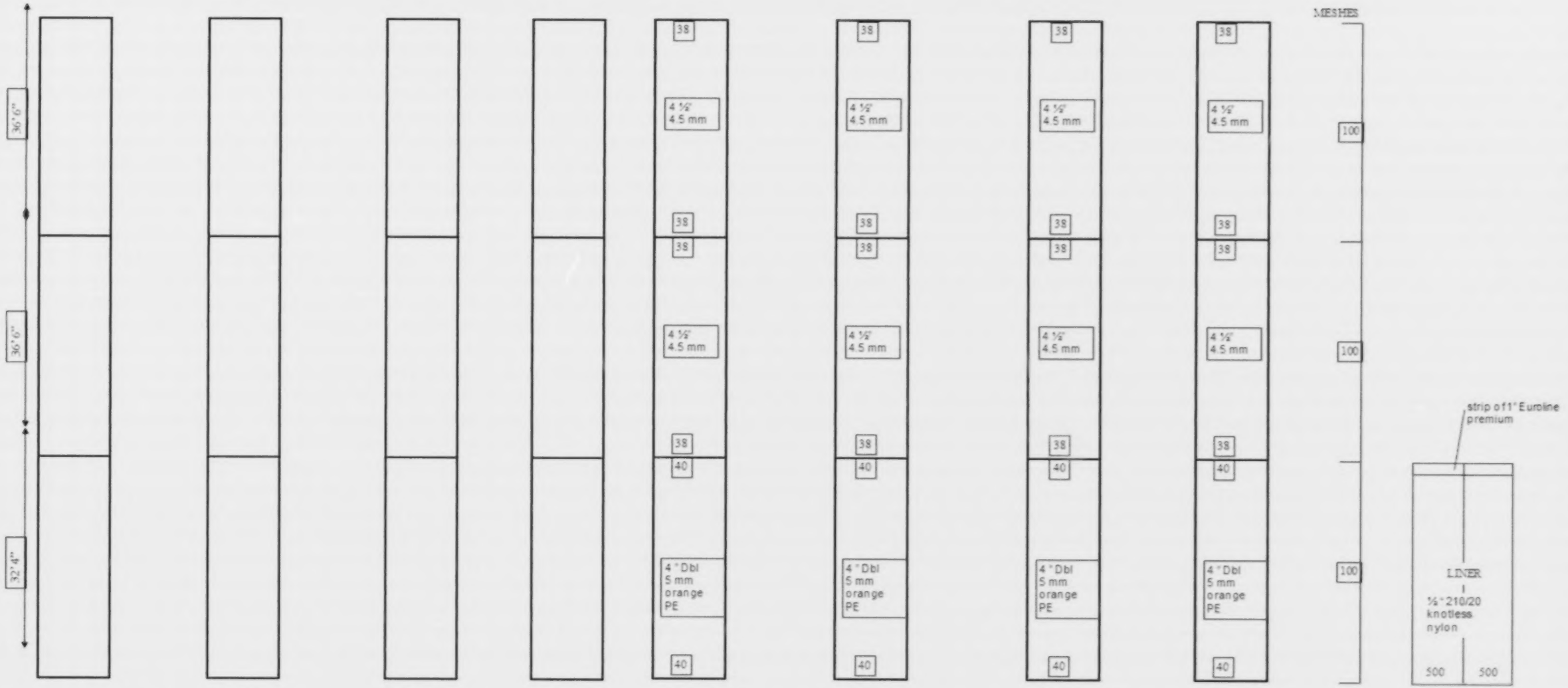

Figure 8. Details of the lengthening (intermediate) pieces and codend sections of the Atlantic Western IIa box trawl used on the 2015 QCS synoptic bottom trawl survey. Dimensions are shown on the left while netting details, mesh counts, and mesh cuts including the codend liner are shown on the right side of the diagram

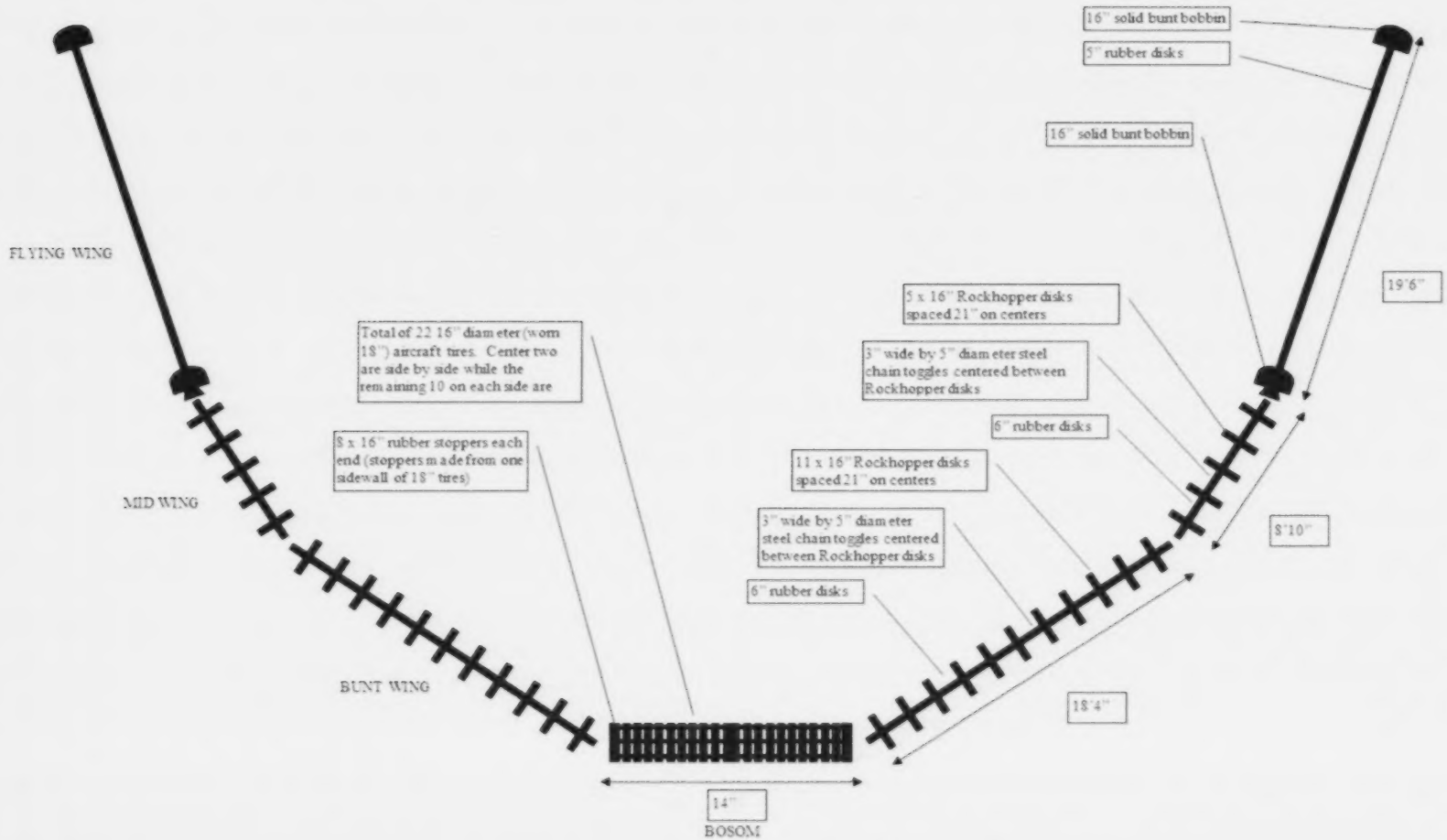
16" solid bunt bobbin
5" rubber disks
16" solid bunt bobbin
FLYING WING
19'6"
5 x 16" Rockhopper disks spaced 21" on centers
Total of 22 16" diameter (worn 18") aircraft tires. Center two are side by side while the remaining 10 on each side are
3" wide by 5" diameter steel chain toggles centered between Rockhopper disks
6" rubber disks
8 x 16" rubber stoppers each end (stoppers made from one sidewall of 18" tires)
11 x 16" Rockhopper disks spaced 21" on centers
MID WING
3" wide by 5" diameter steel chain toggles centered between Rockhopper disks
8'10"
6" rubber disks
BUNT WING
18'4"
14"
BOSOM

Figure 9. Details of the Rockhopper foot gear for the Atlantic Western IIa box trawl used on the 2015 QCS synoptic bottom trawl.

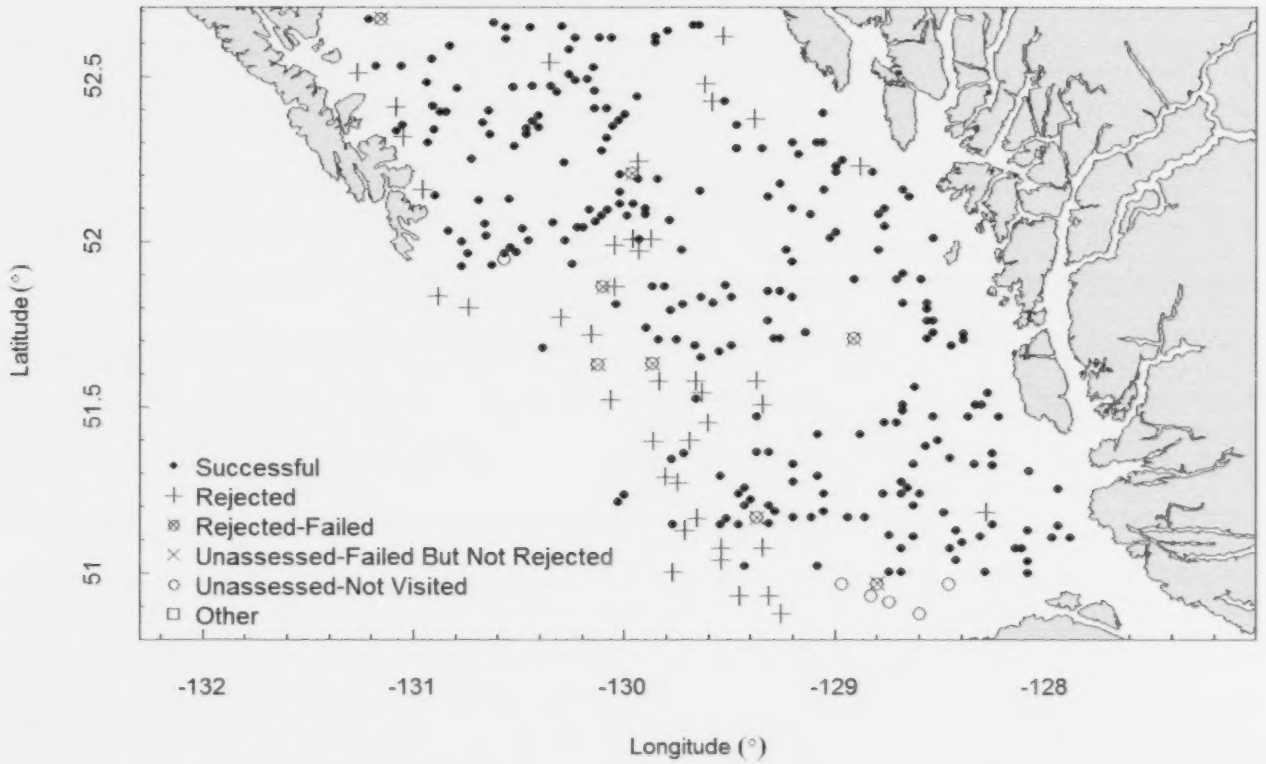

Figure 10. Final status of the 2015 QCS synoptic bottom trawl survey showing 240 successfully fished blocks (Successful), 41 blocks rejected after inspection or based on prior knowledge (Rejected), 8 blocks rejected after one or more failed fishing attempts (Rejected-Failed) and six blocks that were not visited and remain in the sampling frame (Unassessed-Not Visited).

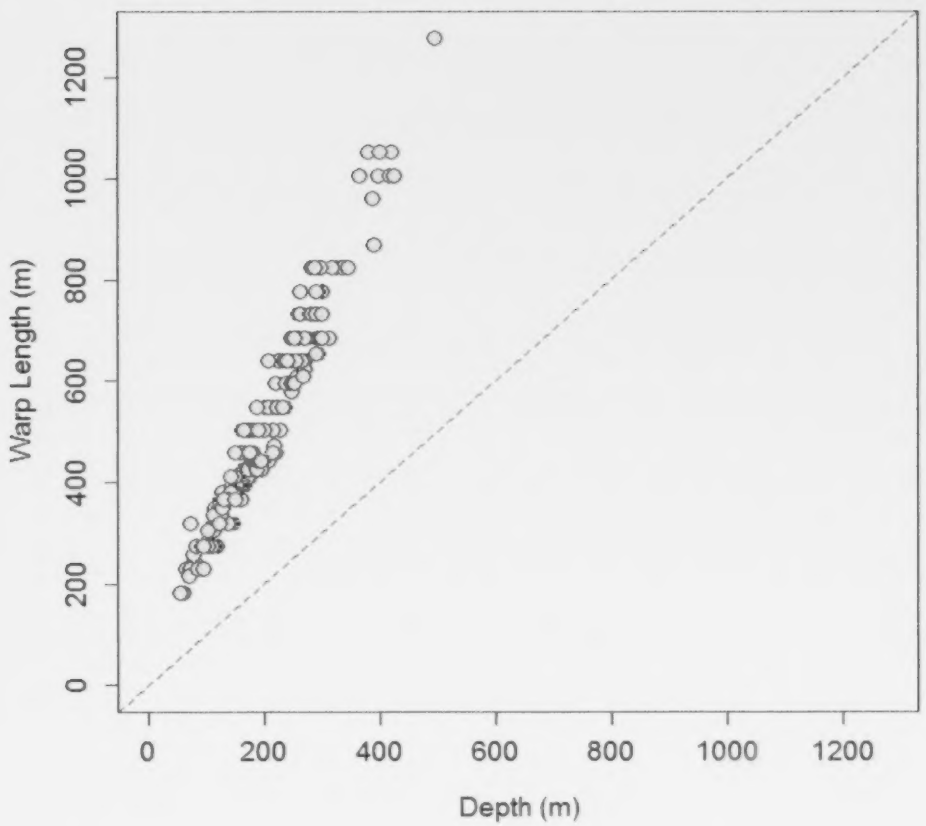

Figure 11. Warp length versus starting depth for each tow during the 2015 QCS synoptic bottom trawl survey

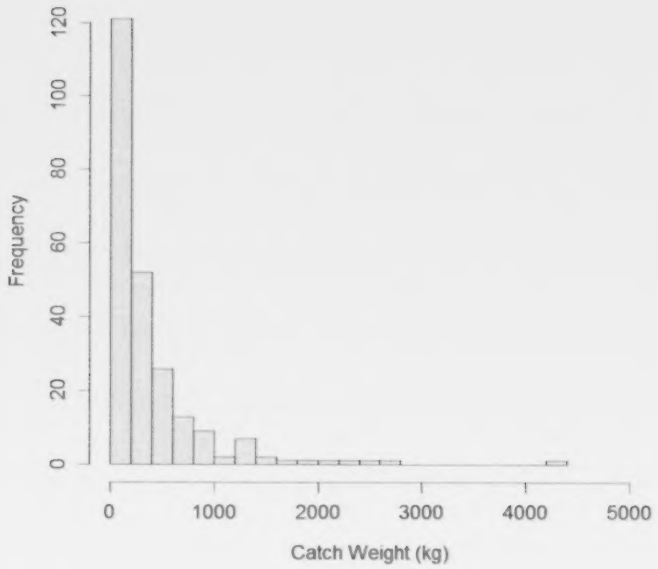

Figure 12. Histogram of catch weight (kg) per useable tow during the 2015 QCS synoptic bottom trawl survey.

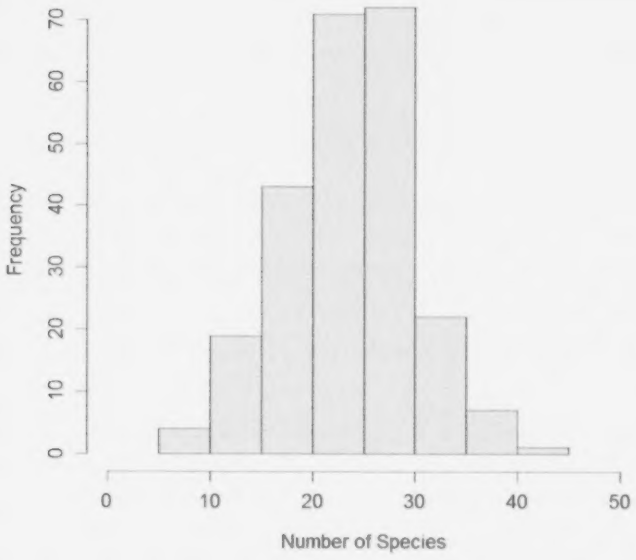

Figure 13. Histogram of the number of species caught per useable tow during the 2015 QCS synoptic bottom trawl survey.

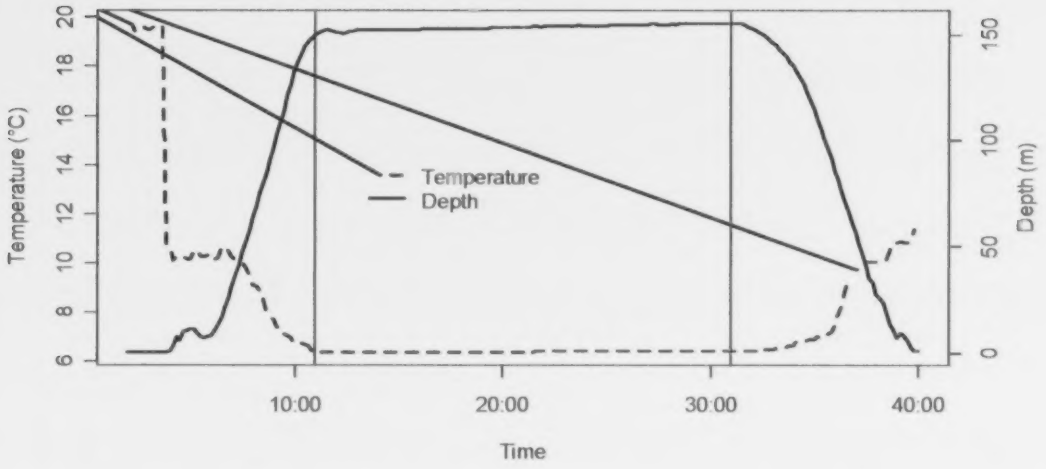

Figure 14. Example of a Seabird 39 temperature and depth profile collected during a synoptic bottom trawl survey. The vertical lines indicate the start and end of net contact with the sea floor.

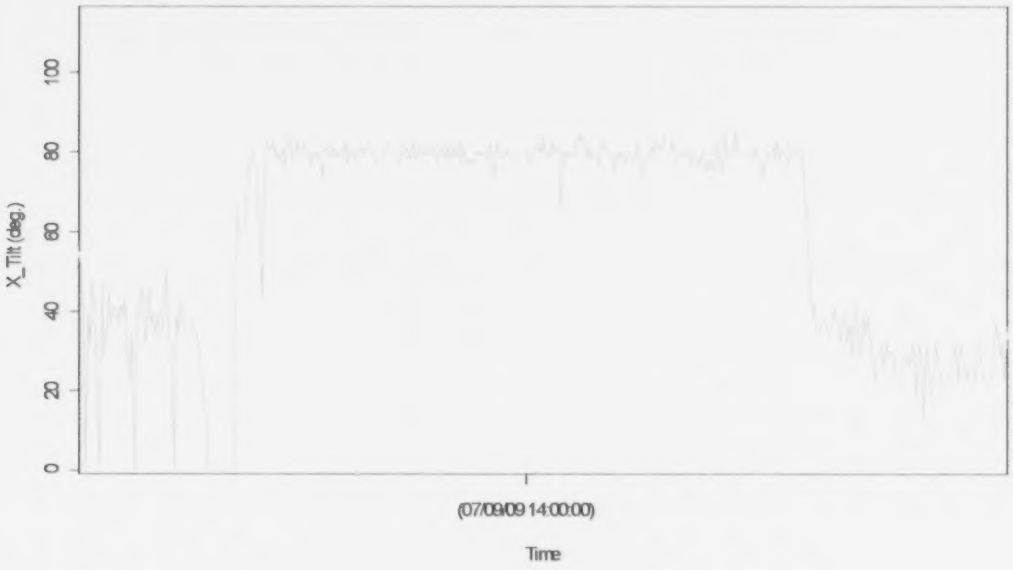

Figure 15. Example of a Mac Marine Industries bottom contact sensor profile collected during a bottom trawl survey. The raised segment in the middle of the profile at approximately 80° indicates where the net made contact with the sea floor.

APPENDIX A: QCS 2015 SURVEY BRIDGE LOG

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable
1	Jul-08	05:54	51.0998	127.8832	126.3	21	5.6	335	1293.79	Yes
2	Jul-08	07:53	51.1160	127.9748	132.9	20	5.6	366	697.68	Yes
3	Jul-08	09:36	51.1495	127.9495	124.4	20	5.7	320	1365.13	Yes
4	Jul-08	11:47	51.2587	127.9541	118.8	20	5.8	335	630.30	Yes
5	Jul-08	13:39	51.3086	128.0896	121.0	20	5.7	320	111.95	Yes
6	Jul-08	15:42	51.3352	128.2767	71.8	21	6.0	216	125.19	Yes
7	Jul-08	16:56	51.3635	128.2362	124.9	20	5.5	335	133.47	Yes
8	Jul-08	18:23	51.3350	128.3285	92.1	20	5.4	274	46.11	Yes
9	Jul-08	19:41	51.3348	128.4431	152.4	22	5.5	395	610.77	Yes
10	Jul-09	05:51	52.0063	128.5408	97.5	20	5.6	274	62.04	Yes
11	Jul-09	07:40	52.0361	128.7676	177.6	20	5.5	426	237.34	Yes
12	Jul-09	08:58	52.0850	128.8122	182.9	20	5.6	441	191.39	Yes
13	Jul-09	10:39	52.0998	128.7721	186.5	20	5.6	426	140.44	Yes
14	Jul-09	12:07	52.1437	128.6502	206.0	20	5.6	441	182.52	Yes
15	Jul-09	13:45	52.1457	128.6916	208.7	20	5.5	441	135.09	Yes
16	Jul-09	15:40	52.2179	128.8165	194.6	20	5.4	426	99.54	Yes
17	Jul-09	17:32	52.2567	128.9626	145.7	21	5.6	380	201.53	Yes
18	Jul-09	18:56	52.2385	129.0030	175.5	21	5.7	426	26.32	Yes
19	Jul-09	20:44	52.2050	128.9817	135.2	20	5.8	366	93.33	Yes
20	Jul-10	06:02	52.6693	129.6645	159.5	19	5.6	395	471.58	Yes
21	Jul-10	07:49	52.6702	129.6683	163.0	20	5.7	395	457.62	Yes
22	Jul-10	09:50	52.6295	129.8118	131.9	20	5.6	366	97.82	Yes
23	Jul-10	10:59	52.6239	129.8489	168.4	19	5.9	426	600.48	Yes
24	Jul-10	12:36	52.5887	129.8660	229.2	19	5.5	503	120.73	Yes
25	Jul-10	16:33	52.4229	129.5293	143.2	20	5.6	366	209.44	Yes
26	Jul-10	18:17	52.3495	129.4653	119.6	20	5.7	335	283.22	Yes
27	Jul-10	20:09	52.2886	129.4767	188.0	20	5.8	426	153.03	Yes
28	Jul-11	05:45	51.8230	128.6909	96.3	20	5.7	274	276.29	Yes
29	Jul-11	07:13	51.8163	128.5661	138.5	20	5.6	366	151.34	Yes
30	Jul-11	08:28	51.8006	128.5748	142.5	20	5.6	380	137.56	Yes
31	Jul-11	09:41	51.7467	128.5538	150.0	20	5.7	380	196.80	Yes
32	Jul-11	10:53	51.7668	128.5415	147.3	20	5.8	380	296.04	Yes
33	Jul-11	12:06	51.7273	128.5270	147.5	21	5.7	380	594.98	Yes
34	Jul-11	13:31	51.7072	128.5749	128.9	20	5.6	349	181.89	Yes
35	Jul-11	14:56	51.7226	128.3976	144.3	22	5.7	412	334.69	Yes
36	Jul-11	16:15	51.7099	128.3783	143.6	21	5.6	380	356.68	Yes
37	Jul-11	17:32	51.6986	128.4388	146.1	20	5.5	380	171.02	Yes
38	Jul-11	19:29	51.5738	128.6086	104.4	22	5.6	304	127.21	Yes
39	Jul-11	20:35	51.5181	128.6663	113.2	21	5.7	335	376.26	Yes
40	Jul-12	05:52	51.4054	128.4959	196.6	21	5.5	441	539.32	Yes
41	Jul-12	07:21	51.3897	128.5659	199.3	20	5.4	441	335.23	Yes
42	Jul-12	08:38	51.3307	128.6135	189.8	20	5.6	441	233.84	Yes
43	Jul-12	10:06	51.2715	128.6764	187.1	20	5.6	426	286.84	Yes
44	Jul-12	11:35	51.2367	128.7804	194.5	20	5.6	441	290.79	Yes
45	Jul-12	12:55	51.2366	128.6994	188.2	20	5.5	426	297.15	Yes
46	Jul-12	14:23	51.2511	128.6656	192.6	20	5.4	441	2081.98	Yes
47	Jul-12	16:03	51.2318	128.5914	198.9	20	5.5	441	387.48	Yes
48	Jul-12	17:18	51.2066	128.6318	185.6	20	5.8	441	247.91	Yes
49	Jul-12	18:49	51.1857	128.5073	198.3	20	5.7	441	355.12	Yes
50	Jul-12	20:04	51.1379	128.4272	186.0	21	5.6	441	593.22	Yes
51	Jul-13	17:57	51.0067	128.0764	133.0	20	5.7	366	212.79	Yes
52	Jul-13	19:12	51.0295	128.0689	152.0	20	5.6	395	423.85	Yes
53	Jul-13	20:27	51.0704	128.1041	158.3	20	5.6	395	981.49	Yes
54	Jul-14	05:51	51.8821	128.5903	132.5	21	5.7	366	530.07	Yes
55	Jul-14	07:12	51.8960	128.6657	144.4	21	5.6	380	1133.44	Yes
56	Jul-14	08:39	51.8795	128.7022	139.4	22	5.5	380	877.32	Yes
57	Jul-14	10:27	51.8775	128.9247	80.7	20	6.2	243	55.62	Yes

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable
58	Jul-14	12:09	51.9673	128.7835	172.0	21	5.7	426	345.15	Yes
59	Jul-14	14:03	52.0160	129.0386	162.5	21	5.8	412	216.44	Yes
60	Jul-14	15:26	52.0216	129.0007	173.4	21	5.6	426	99.44	Yes
61	Jul-14	16:56	52.0774	129.1311	138.4	16	5.4	380	59.04	Yes
62	Jul-14	19:07	52.0938	129.2109	162.6	21	5.9		119.10	Yes
63	Jul-14	20:28	52.1550	129.0518	134.3	21	5.5	380	177.13	Yes
64	Jul-15	05:51	52.6225	130.0607	268.9	20	5.7	609	89.75	Yes
65	Jul-15	07:56	52.6274	130.1098	253.9	20	5.5	594	92.45	Yes
66	Jul-15	09:37	52.6047	130.2489	248.1	21	5.6	594	225.56	Yes
67	Jul-15	11:22	52.6571	130.2922	236.4	21	5.6	549	294.55	Yes
68	Jul-15	13:10	52.6532	130.4643	160.0	20	5.7	395	580.20	Yes
69	Jul-15	15:06	52.5762	130.2784	253.0	19	5.5	594	240.48	Yes
70	Jul-15	17:38	52.5031	130.2789	292.8	20	5.4	655	45.21	Yes
71	Jul-15	19:05	52.4881	130.2435	312.8	21	5.5	686	55.16	Yes
72	Jul-15	20:29	52.5369	130.1651	291.2	20	5.6	655	65.77	Yes
73	Jul-16	05:50	52.3951	129.0693	123.4	20	5.7	335	454.84	Yes
74	Jul-16	07:16	52.2895	129.0619	166.6	21	5.7	395	233.00	Yes
75	Jul-16	08:39	52.3067	129.0788	159.9	20	5.6	395	149.49	Yes
76	Jul-16	10:06	52.2564	129.1614	158.7	21	5.7	395	78.23	Yes
77	Jul-16	11:22	52.2906	129.1894	163.1	20	5.6	395	147.39	Yes
78	Jul-16	12:56	52.2881	129.3716	159.4	20	5.6	395	323.59	Yes
79	Jul-16	14:46	52.1621	129.2505	177.6	19	5.7	426	71.66	Yes
80	Jul-16	16:13	52.1281	129.3060	166.4	20	5.7	426	171.21	Yes
81	Jul-16	18:27	52.1404	129.6502	217.6	20	5.4	472	33.94	Yes
82	Jul-16	20:37	52.1724	129.8562	151.3	20	5.6	395	96.79	Yes
83	Jul-17	05:52	52.4563	130.8072	124.1	20	5.4	349	44.99	Yes
84	Jul-17	07:16	52.4688	130.9320	106.9	21	5.5	289	27.77	Yes
85	Jul-17	08:39	52.5553	130.9070	87.8	19	5.7	274	55.05	Yes
86	Jul-17	10:11	52.6002	130.8184	113.5	19	5.6	320	45.31	Yes
87	Jul-17	12:24	52.6926	131.1506	71.8	12	3.7	274	28.54	No
88	Jul-17	13:35	52.6805	131.2081	77.5	21	5.6	258	31.55	Yes
89	Jul-17	15:03	52.5372	131.1862	171.6	21	5.6	426	731.28	Yes
90	Jul-17	16:27	52.5345	131.0613	179.8	20	5.7	426	322.20	Yes
91	Jul-17	18:08	52.4154	130.9183	118.2	20	5.8	335	37.88	Yes
92	Jul-17	19:12	52.3824	130.8720	129.8	20	5.5	380	49.94	Yes
93	Jul-17	20:28	52.3849	130.8480	127.8	21	5.5	380	126.22	Yes
94	Jul-18	06:07	52.3463	131.0623	127.4	20	5.5	366	236.69	Yes
95	Jul-18	07:25	52.3259	131.0772	116.3	20	5.6	349	198.02	Yes
96	Jul-18	09:37	52.3442	130.8925	140.8	20	5.6	380	2549.18	Yes
97	Jul-18	11:06	52.2919	130.9517	153.6	21	6.0	412	393.01	Yes
98	Jul-18	13:34	52.1306	130.8860	220.0	20	5.5	457	422.01	Yes
99	Jul-18	15:38	52.0266	130.8492	248.3	20	5.2	578	124.93	Yes
100	Jul-18	16:53	52.0015	130.7672	271.8	20	5.3	624	125.56	Yes
101	Jul-18	18:09	51.9745	130.7530	271.2	20	5.7	640	429.17	Yes
102	Jul-18	19:37	51.9251	130.7782	258.4	21	5.6	609	452.06	Yes
103	Jul-19	09:10	51.1358	128.2386	157.0	20	5.6	395	2749.99	Yes
104	Jul-19	11:15	51.1242	128.0645	123.8	21	5.6	349	258.87	Yes
105	Jul-19	12:43	51.0660	128.1282	155.5	21	5.3	412	727.15	Yes
106	Jul-19	14:38	51.1026	128.2906	181.1	20	5.5	441	610.72	Yes
107	Jul-19	16:05	51.1028	128.4111	172.1	21	5.7	426	540.64	Yes
108	Jul-19	17:42	51.0763	128.4436	145.3	21	6.0	395	348.80	Yes
109	Jul-19	19:01	51.0481	128.4507	112.1	20	5.6	304	94.72	Yes
110	Jul-19	20:37	51.0053	128.2755	82.6	18	5.9	274	131.02	Yes
111	Jul-21	06:19	51.4609	128.2064	114.1	20	5.5	274	184.73	Yes
112	Jul-21	08:40	51.4627	128.3748	171.7	22	5.2	457	329.79	Yes
113	Jul-21	10:12	51.5115	128.3108	160.8	20	5.8	366	214.12	Yes
114	Jul-21	11:46	51.5500	128.2820	151.1	21	5.5	412	198.62	Yes
115	Jul-21	13:07	51.5028	128.3361	166.8	24	5.7	503	374.99	Yes
116	Jul-21	14:52	51.4766	128.5275	199.9	21	5.3	503	494.88	Yes
117	Jul-21	16:26	51.4926	128.6684	160.2	22	5.1	457	917.12	Yes

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable
118	Jul-21	18:03	51.4614	128.6987	185.0	23	5.4	503	502.53	Yes
119	Jul-21	19:49	51.4574	128.7641	164.5	23	5.8	503	669.05	Yes
120	Jul-22	06:09	51.4224	128.8646	193.8	22	5.6	503	243.15	Yes
121	Jul-22	07:42	51.4180	129.0735	162.7	22	5.8	457	1777.92	Yes
122	Jul-22	09:31	51.2943	129.0798	254.6	22	5.2	640	343.26	Yes
123	Jul-22	11:01	51.2455	129.0437	216.5	20	5.1	457	282.96	Yes
124	Jul-22	12:27	51.1894	129.0451	138.8	20	5.3	320	158.00	Yes
125	Jul-22	14:03	51.2737	129.1954	270.8	22	5.2	686	362.33	Yes
126	Jul-22	15:34	51.3263	129.1768	241.7	23	5.0	640	340.88	Yes
127	Jul-22	17:03	51.3591	129.3040	159.5	22	4.9	457	344.49	Yes
128	Jul-22	18:24	51.3561	129.3556	163.2	21	5.4	457	199.02	Yes
129	Jul-22	19:53	51.2928	129.5396	235.1	22	5.4	640	968.86	Yes
130	Jul-23	06:23	52.2460	130.2773	390.0	23	5.0	869	183.96	Yes
131	Jul-23	08:21	52.2730	130.1122	294.2	20	5.8	686	47.72	Yes
132	Jul-23	09:34	52.3072	130.0878	267.0	20	5.6	640	107.02	Yes
133	Jul-23	10:46	52.3478	130.0553	249.9	20	5.8	640	56.51	Yes
134	Jul-23	12:05	52.3610	130.0257	238.4	22	5.5	640	119.14	Yes
135	Jul-23	13:34	52.3820	130.0021	245.9	23	5.3	640	107.78	Yes
136	Jul-23	14:54	52.4376	129.9443	234.7	22	5.6	640	129.64	Yes
137	Jul-23	17:19	52.4002	130.0767	296.0	23	5.3	732	61.38	Yes
138	Jul-23	18:32	52.4095	130.1237	311.8	22	5.1	686	89.79	Yes
139	Jul-23	19:43	52.4424	130.1468	295.5	21	5.3	686	48.67	Yes
140	Jul-23	20:42	52.4857	130.1732	301.2	21	5.5	686	54.23	Yes
141	Jul-24	06:17	52.6830	130.6236	140.3	20	5.6	320	116.83	Yes
142	Jul-24	07:27	52.6591	130.5766	161.6	21	5.4	366	135.23	Yes
143	Jul-24	08:38	52.6211	130.5758	154.9	20	5.7	366	256.19	Yes
144	Jul-24	10:04	52.4788	130.5388	143.2	21	5.6	320	119.34	Yes
145	Jul-24	11:29	52.4804	130.4335	207.4	23	5.8	549	141.08	Yes
146	Jul-24	12:57	52.4515	130.3294	272.1	20	5.5	686	78.71	Yes
147	Jul-24	14:17	52.4820	130.3513	226.4	22	5.4	640	949.61	Yes
148	Jul-24	16:11	52.3842	130.4110	214.0	21	5.0	549	2380.10	Yes
149	Jul-24	17:57	52.3645	130.4349	233.0	20	5.9	549	357.60	Yes
150	Jul-24	19:47	52.3100	130.4701	237.1	21	5.8	640	138.53	Yes
151	Jul-25	06:19	52.3435	130.4602	238.7	22	5.7	594	133.13	Yes
152	Jul-25	07:44	52.3378	130.4051	254.9	23	5.8	640	107.74	Yes
153	Jul-25	09:47	52.4035	130.6319	145.6	21	5.9	366	1378.24	Yes
154	Jul-25	11:16	52.3694	130.6580	136.2	20	6.1	366	41.34	Yes
155	Jul-25	12:19	52.3328	130.6421	156.6	20	5.8	366	113.11	Yes
156	Jul-25	13:43	52.2932	130.5159	174.0	20	5.8	412	296.14	Yes
157	Jul-25	15:18	52.2563	130.7165	175.0	18	5.4	412	216.76	Yes
158	Jul-25	17:14	52.1352	130.5377	241.1	22	5.2	594	170.27	Yes
159	Jul-25	19:00	52.1333	130.6885	221.0	23	5.5	594	150.36	Yes
160	Jul-25	20:22	52.0576	130.6725	257.3	22	5.4	686	57.12	Yes
161	Jul-26	06:09	51.9689	129.2407	180.8	20	5.8	457	115.24	Yes
162	Jul-26	07:27	51.9454	129.1911	179.0	23	5.5	503	1875.54	Yes
163	Jul-26	09:29	51.8597	129.3087	152.0	23	5.6	457	671.62	Yes
164	Jul-26	10:57	51.8593	129.2603	129.9	21	5.4	366	299.22	Yes
165	Jul-26	12:13	51.8406	129.1885	123.8	20	5.7	320	33.72	Yes
166	Jul-26	13:34	51.7637	129.3121	102.5	21	5.7	274	120.75	Yes
167	Jul-26	14:45	51.7101	129.3028	61.4	21	5.6	183	82.14	Yes
168	Jul-26	16:08	51.6945	129.2444	55.3	20	5.8	183	45.68	Yes
169	Jul-26	17:15	51.7264	129.1508	96.3	21	5.8	274	158.94	Yes
170	Jul-26	18:44	51.7098	128.9242	54.9	9	5.3	137	0.00	No
171	Jul-28	06:18	51.1732	129.1169	153.9	20	5.3	412	211.41	Yes
172	Jul-28	07:47	51.1747	129.2001	208.8	24	4.9	640	450.80	Yes
173	Jul-28	09:24	51.1537	129.3158	264.4	24	5.0	732	1217.06	Yes
174	Jul-28	11:24	51.1827	129.2926	299.8	27	5.1	777	610.37	Yes
175	Jul-30	06:21	51.4639	129.3684	86.6	21	5.8	229	168.06	Yes
176	Jul-30	08:46	51.6815	129.4985	94.7	20	5.9	229	429.92	Yes
177	Jul-30	09:59	51.6787	129.5467	110.4	21	5.5	274	27.48	Yes

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable
178	Jul-30	11:10	51.6541	129.6409	135.8	21	5.2	366	71.53	Yes
179	Jul-30	12:38	51.6943	129.6605	188.8	24	5.7	549	1252.39	Yes
180	Jul-30	14:18	51.8098	129.5787	263.2	24	5.4	777	190.65	Yes
181	Jul-30	15:44	51.8283	129.5002	248.0	25	5.6	686	196.94	Yes
182	Jul-30	17:07	51.8614	129.5193	253.3	25	5.4	686	252.17	Yes
183	Jul-30	18:29	51.8282	129.6444	288.9	26	5.4	823	109.58	Yes
184	Jul-30	19:40	51.8113	129.7232	297.1	24	5.1	823	183.48	Yes
185	Jul-31	07:17	51.9272	130.6384	283.8	26	5.4	823	892.45	Yes
186	Jul-31	09:04	51.9572	130.5698	382.0	26	6.0	1052	161.32	Yes
187	Jul-31	10:39	51.9671	130.5115	404.4	10	3.9	1097	52.51	No
188	Jul-31	11:50	51.9653	130.5066	420.0	28	5.1	1052	200.86	Yes
189	Jul-31	13:28	51.9937	130.5323	397.1	27	4.7	1006	474.95	Yes
190	Jul-31	15:39	52.0207	130.6696	231.3	20	5.7	549	542.80	Yes
191	Jul-31	17:21	52.0291	130.4960	365.8	29	5.2	1006	534.64	Yes
192	Jul-31	19:31	52.0056	130.4437	419.5	26	5.0	1006	161.28	Yes
193	Aug-01	06:29	52.2155	130.0120	146.2	20	5.8	320	185.45	Yes
194	Aug-01	07:32	52.2094	129.9707	142.6	6	5.7	366	21.06	No
195	Aug-01	08:36	52.1817	129.9318	145.3	17	5.4	320	63.26	Yes
196	Aug-01	09:39	52.1473	130.0209	153.1	23	5.3	366	154.94	Yes
197	Aug-01	10:55	52.1200	129.9591	151.2	20	5.4	366	76.44	Yes
198	Aug-01	11:57	52.1220	130.0224	156.2	20	5.5	366	143.98	Yes
199	Aug-01	13:04	52.0860	129.9763	146.3	21	5.5	366	46.23	Yes
200	Aug-01	14:16	52.0726	129.9100	128.6	21	5.4	320	29.65	Yes
201	Aug-01	15:12	52.0880	129.8878	125.5	21	5.4	320	18.50	Yes
202	Aug-01	16:29	52.0680	129.8001	111.9	21	5.8	274	72.52	Yes
203	Aug-01	18:15	51.9616	129.7333	128.0	21	5.6	320	51.37	Yes
204	Aug-01	19:59	52.0191	129.9248	126.8	18	5.7	366	59.95	Yes
205	Aug-02	06:55	52.0982	130.0940	191.4	22	5.9	503	144.63	Yes
206	Aug-02	08:15	52.0750	130.1232	154.5	21	5.8	366	259.72	Yes
207	Aug-02	09:34	52.0863	130.1761	264.0	26	5.9	732	86.47	Yes
208	Aug-02	10:55	52.0640	130.1377	174.9	22	5.5	503	325.10	Yes
209	Aug-02	12:05	52.0526	130.1931	260.6	25	4.8	732	156.42	Yes
210	Aug-02	13:31	52.0503	130.2201	292.7	26	5.0	823	155.28	Yes
211	Aug-02	15:08	52.0661	130.3399	400.3	30	5.0	1052	192.42	Yes
212	Aug-02	16:53	51.9953	130.2895	323.0	24	5.2	823	153.28	Yes
213	Aug-02	18:29	51.9256	130.2617	204.1	22	5.3	549	66.06	Yes
214	Aug-02	20:22	51.8551	130.0912	180.1	4	4.0	457	0.00	No
215	Aug-03	06:24	51.1380	129.5269	284.8	25	5.0	732	908.54	Yes
216	Aug-03	08:06	51.1595	129.5260	281.5	23	5.4	732	272.06	Yes
217	Aug-03	09:31	51.1435	129.4460	281.3	20	5.1	732	331.06	Yes
218	Aug-03	10:52	51.1973	129.4312	284.3	27	5.4	732	640.65	Yes
219	Aug-03	12:21	51.2237	129.3981	290.8	22	5.5	777	443.91	Yes
220	Aug-03	14:01	51.2517	129.4140	290.9	25	4.9	777	514.74	Yes
221	Aug-03	15:36	51.2376	129.4637	291.7	23	5.4	732	429.44	Yes
222	Aug-03	17:09	51.2092	129.3040	293.0	18	5.7	777	683.89	Yes
223	Aug-03	18:44	51.1696	129.3819	287.3	12	5.2	732	272.56	No
224	Aug-05	07:17	51.6239	129.8790	219.2	10	5.0	549	350.30	No
225	Aug-05	08:47	51.7003	129.8472	335.7	25	5.0	823	211.02	Yes
226	Aug-05	10:12	51.6958	129.7647	300.1	25	5.4	732	116.10	Yes
227	Aug-05	11:56	51.7335	129.9058	344.7	25	5.5	823	706.97	Yes
228	Aug-05	13:28	51.7898	129.7901	318.9	30	5.6	823	890.21	Yes
229	Aug-05	15:10	51.8672	129.7963	176.2	19	5.3	457	1115.64	Yes
230	Aug-05	16:30	51.8693	129.8601	150.1	16	5.7	366	92.62	Yes
231	Aug-05	18:20	51.8163	130.0450	190.8	21	6.1	503	395.49	Yes
232	Aug-06	06:41	51.6778	130.3967	286.5	2	3.5	732	17.12	No
233	Aug-06	07:29	51.6799	130.3992	317.3	26	5.2	823	1507.16	Yes
234	Aug-06	10:07	51.6261	130.1161	420.5	5	3.3	1006	0.00	No
235	Aug-06	11:32	51.6362	130.1311	391.4	5	4.7	869	101.08	No
236	Aug-06	15:46	51.5190	129.6735	150.1	16	5.9	366	435.25	Yes
237	Aug-06	18:24	51.3534	129.7332	215.4	21	5.3	503	1318.32	Yes

Tow	Date	Start Time	Start Latitude	Start Longitude	Average Depth (m)	Bottom Duration (min)	Speed (km/h)	Warp (m)	Catch (kg)	Usable
238	Aug-06	19:59	51.3451	129.7647	232.1	23	5.3	549	4225.40	Yes
239	Aug-07	06:33	51.2388	130.0021	387.9	25	4.9	960	1545.29	Yes
240	Aug-07	08:32	51.2188	130.0264	495.6	23	5.1	1280	435.92	Yes
241	Aug-07	11:11	51.1420	129.7602	424.7	18	5.8	1006	1397.96	Yes
242	Aug-07	16:33	51.0290	129.4264	223.4	20	5.4	549	980.52	Yes
243	Aug-08	06:33	51.0308	129.0672	118.9	21	5.4	274	459.14	Yes
244	Aug-08	08:48	51.1557	128.9577	127.3	22	5.3	366	42.62	Yes
245	Aug-08	09:57	51.1599	128.8669	119.1	20	5.7	320	27.26	Yes
246	Aug-08	11:34	51.1176	128.7257	73.0	21	5.8	229	96.16	Yes
247	Aug-08	12:44	51.1175	128.6387	114.9	22	5.9	320	81.14	Yes
248	Aug-08	14:02	51.0628	128.6730	72.1	24	5.9	320	48.60	Yes
249	Aug-08	15:12	51.0140	128.6826	66.3	24	5.2	229	36.36	Yes
250	Aug-08	16:34	51.0166	128.7267	69.1	22	5.0	229	111.52	Yes
251	Aug-08	17:58	50.9590	128.7959	68.6	7	5.2	229	47.06	No

APPENDIX B: CATCH BY TOW (KG).<0.1 KG ENTERED AS –

Common Name	Scientific Name	Total Weight (Kg)	1	2	3	4	5	6	7
Aleutian Skate	*Bathyraja aleutica*	10.0							
Arrowtooth Flounder	*Atheresthes stomias*	19999.6	400.3	353.2	516.6	102.8	4.8		16.3
Aurora Rockfish	*Sebastes aurora*	23.6							
Big Skate	*Beringraja binoculata*	77.3							
Bigfin Eelpout	*Lycodes cortezianus*	12.4							
Bigmouth Sculpin	*Hemitripterus bolini*	22.2							
Blackbelly Eelpout	*Lycodes pacificus*	259.9	6.3	8.7	25.1	6.5	0.9		1.2
Bocaccio	*Sebastes paucispinis*	27.5		4.2					
Canary Rockfish	*Sebastes pinniger*	2106.6	20.6	1.3	1.6	1.3		12.2	0.5
Darkblotched Rockfish	*Sebastes crameri*	32.1							
Dover Sole	*Microstomus pacificus*	2724.4	219.2	78.5	169.5	37.0	4.3		1.9
English Sole	*Parophrys vetulus*	785.5	0.5	0.4		1.1	4.2	0.2	27.0
Eulachon	*Thaleichthys pacificus*	254.6	0.4	0.3	0.2	1.2	3.1		1.0
Flathead Sole	*Hippoglossoides elassodon*	1846.9	0.3	3.8	71.5	363.7	27.3		30.4
Greenstriped Rockfish	*Sebastes elongatus*	415.2		0.7					
Lingcod	*Ophiodon elongatus*	376.6				5.1		11.2	1.0
Longnose Skate	*Raja rhina*	563.4	0.5						
Longspine Thornyhead	*Sebastolobus altivelis*	18.5							
North Pacific Spiny Dogfish	*Squalus suckleyi*	578.4				3.2			
Pacific Cod	*Gadus macrocephalus*	1639.3	5.6	14.4	7.3	37.0	1.0		3.1
Pacific Hake	*Merluccius productus*	1327.8							
Pacific Halibut	*Hippoglossus stenolepis*	1122.7	6.6		7.6				
Pacific Ocean Perch	*Sebastes alutus*	19850.9							
Pacific Sand Lance	*Ammodytes personatus*	82.3							
Pacific Sanddab	*Citharichthys sordidus*	351.5					0.7	0.7	0.1
Petrale Sole	*Eopsetta jordani*	313.0							
Prowfish	*Zaprora silenus*	8.6							
Pygmy Rockfish	*Sebastes wilsoni*	16.2	0.3						
Quillback Rockfish	*Sebastes maliger*	77.6						1.2	4.7
Redbanded Rockfish	*Sebastes babcocki*	1132.4							
Redstripe Rockfish	*Sebastes proriger*	2299.4	0.5	5.3	0.6			0.2	
Rex Sole	*Glyptocephalus zachirus*	2735.8	42.9	60.4	25.9	9.3	30.7		8.1
Rosethorn Rockfish	*Sebastes helvomaculatus*	77.0							
Rougheye Rockfish	*Sebastes aleutianus*	1861.5							
Sablefish	*Anoplopoma fimbria*	2280.9	64.9	28.0	40.9	11.0	3.6		15.4
Sandpaper Skate	*Bathyraja interrupta*	18.1							
Sharpchin Rockfish	*Sebastes zacentrus*	1091.3		0.3					
Shortraker Rockfish	*Sebastes borealis*	225.2							
Shortspine Thornyhead	*Sebastolobus alascanus*	1608.2							
Silvergray Rockfish	*Sebastes brevispinis*	9391.6							
Slender Sole	*Lyopsetta exilis*	71.1	5.4	2.2	4.4	1.3			0.3
Southern Rock Sole	*Lepidopsetta bilineata*	351.4				0.1	0.3	13.6	
Splitnose Rockfish	*Sebastes diploproa*	492.6							
Spotted Ratfish	*Hydrolagus colliei*	1309.9	139.5	25.6	19.3	39.1	4.9	74.7	8.1
Threadfin Sculpin	*Icelinus filamentosus*	16.4							
Walleye Pollock	*Gadus chalcogrammus*	2731.1	358.4	60.2	462.9	3.8	3.8		4.0
Widow Rockfish	*Sebastes entomelas*	230.0							
Yelloweye Rockfish	*Sebastes ruberrimus*	172.5							
Yellowmouth Rockfish	*Sebastes reedi*	1660.7							
Yellowtail Rockfish	*Sebastes flavidus*	2421.1		40.6	7.2				
Other		3883.7	21.6	9.5	4.7	6.6	22.4	11.4	10.4
Total		**90986.2**	**1293.8**	**697.7**	**1365.1**	**630.3**	**112.0**	**125.2**	**133.5**

Common Name	8	9	10	11	12	13	14	15	16	17	18	19
Aleutian Skate												
Arrowtooth Flounder	2.7	370.3	2.5	164.3	79.7	45.8	91.8	54.7	40.3	139.2	5.6	33.8
Aurora Rockfish												
Big Skate												
Bigfin Eelpout												
Bigmouth Sculpin												
Blackbelly Eelpout	-	0.1		13.3	22.6	5.4	0.8	0.7	0.5			
Bocaccio												
Canary Rockfish										0.8		
Darkblotched Rockfish				0.3	0.3							
Dover Sole		30.0		9.1	5.6	3.5	2.1	0.7			0.3	0.2
English Sole	1.9		14.3									
Eulachon		-			1.2	1.3	0.7	9.6	0.2			
Flathead Sole	2.3	150.6		19.1	54.8	28.9	22.2	15.7	4.6			
Greenstriped Rockfish			0.2							2.6	0.6	0.3
Lingcod	7.4		8.0	1.2						14.2		
Longnose Skate		16.6			5.6	3.6	8.3	2.6				
Longspine Thornyhead												
North Pacific Spiny Dogfish												
Pacific Cod	2.3	1.2	4.0						17.7	2.4		12.4
Pacific Hake					-							
Pacific Halibut	3.0		6.2				10.6			11.3		4.1
Pacific Ocean Perch		0.1		0.6	0.2	4.7	0.3	2.0	7.4	2.1	0.7	0.2
Pacific Sand Lance												
Pacific Sanddab	4.8		0.4									
Petrale Sole	6.1		0.1	5.6	1.0	1.5						
Prowfish												
Pygmy Rockfish												0.6
Quillback Rockfish			4.1	1.2		2.2						
Redbanded Rockfish									0.3	3.4	4.7	4.3
Redstripe Rockfish		0.9	0.6	0.6								0.3
Rex Sole	0.3	6.2	3.1	8.2	1.3	0.3	0.6	0.6	0.2	2.1	1.6	0.5
Rosethorn Rockfish												0.6
Rougheye Rockfish					0.1		1.1	0.2				
Sablefish	2.9	0.8			3.8		4.7	1.2				
Sandpaper Skate								1.2				
Sharpchin Rockfish							0.1		0.1	0.2	1.3	0.6
Shortraker Rockfish												
Shortspine Thornyhead							0.7					
Silvergray Rockfish		2.3	0.5						3.1	7.4	1.4	5.8
Slender Sole		0.3	-	0.8	0.2	0.1	0.5	0.2	0.2	-		0.1
Southern Rock Sole	1.4	0.2	3.4	0.7								
Splitnose Rockfish									0.2			
Spotted Ratfish	10.2	15.1	10.2	6.7	5.8	8.7	13.9	3.1	4.3	1.2	1.4	2.4
Threadfin Sculpin												
Walleye Pollock	1.0		1.6	0.9		3.9	7.1	17.0			0.5	
Widow Rockfish												
Yelloweye Rockfish						0.3				9.2		2.3
Yellowmouth Rockfish										0.6		0.6
Yellowtail Rockfish		1.7								1.2	1.7	6.3
Other	-	14.4	2.9	4.7	9.1	30.3	16.9	25.6	20.6	3.7	6.6	17.9
Total	**46.1**	**610.8**	**62.0**	**237.3**	**191.4**	**140.4**	**182.5**	**135.1**	**99.5**	**201.5**	**26.3**	**93.3**

Common Name	20	21	22	23	24	25	26	27	28	29	30	31
Aleutian Skate												
Arrowtooth Flounder	359.8	299.1	10.0	1.1	5.0	135.2	109.7	104.7	22.5	77.0	81.6	105.3
Aurora Rockfish												
Big Skate												
Bigfin Eelpout												
Bigmouth Sculpin		3.0										
Blackbelly Eelpout								-		0.6	3.0	6.6
Bocaccio												
Canary Rockfish			5.3	3.3			14.2					
Darkblotched Rockfish												
Dover Sole	0.7				1.1	0.4		4.2	0.2	0.8	0.2	5.4
English Sole									3.2	8.4	6.8	4.1
Eulachon								-		0.1	0.7	8.6
Flathead Sole					0.7					18.9	20.2	15.8
Greenstriped Rockfish	0.8		2.9	5.8		0.6				0.4		0.3
Lingcod			5.6	5.2			11.6	1.2				
Longnose Skate	14.2				7.3		9.5					
Longspine Thornyhead												
North Pacific Spiny Dogfish		6.2	1.7		1.5	1.8	1.9					2.0
Pacific Cod	26.8	26.1	1.4	11.4		52.0	9.8	5.6	5.1			
Pacific Hake												
Pacific Halibut			25.9			5.7	85.6	3.0				
Pacific Ocean Perch	1.0	0.6		2.1	36.5	0.1	-	1.1		0.1	0.1	0.1
Pacific Sand Lance												
Pacific Sanddab									166.6			
Petrale Sole	1.1	0.9	0.8				1.0	0.9	1.1	1.8		
Prowfish					-							
Pygmy Rockfish			0.2									
Quillback Rockfish							0.6			4.3	0.5	
Redbanded Rockfish	2.1	1.2			6.4	1.0		2.8		0.4		
Redstripe Rockfish	0.4		0.3	481.6	0.7		0.3			0.3		
Rex Sole	0.2	0.3		1.0	7.1	1.0		2.3	0.7	2.8	5.5	4.7
Rosethorn Rockfish												
Rougheye Rockfish	0.2	1.0										
Sablefish		0.8			0.9			2.9		4.3	12.9	23.3
Sandpaper Skate												
Sharpchin Rockfish	0.3	0.3	0.2	9.3	12.0	0.2	0.5	0.6		0.3	0.1	0.1
Shortraker Rockfish												
Shortspine Thornyhead					2.9	0.3						
Silvergray Rockfish	32.9	92.0	17.1	13.4	2.9		3.5					0.7
Slender Sole								0.2		0.4	0.4	0.1
Southern Rock Sole									1.6		0.1	
Splitnose Rockfish												
Spotted Ratfish	1.9	1.6	10.1	1.7		3.8	2.0	1.4	1.4	2.6	0.8	2.1
Threadfin Sculpin										2.4		0.3
Walleye Pollock	15.0	4.5	-	2.6	1.1	-	-	-				8.0
Widow Rockfish					1.2							
Yelloweye Rockfish			2.7	4.8						4.1		6.7
Yellowmouth Rockfish	0.3			29.6						0.5		
Yellowtail Rockfish	2.4			14.7			29.3					
Other	11.4	20.1	13.6	13.0	33.4	7.3	3.8	22.4	74.0	20.7	4.9	2.6
Total	**471.6**	**457.6**	**97.8**	**600.5**	**120.7**	**209.4**	**283.2**	**153.0**	**276.3**	**151.3**	**137.6**	**196.8**

Common Name	32	33	34	35	36	37	38	39	40	41	42	43
Aleutian Skate					7.0							
Arrowtooth Flounder	131.1	64.3	79.7	197.7	195.0	67.1	23.9	166.6	96.9	91.0	65.3	23.8
Aurora Rockfish												
Big Skate												
Bigfin Eelpout												
Bigmouth Sculpin									6.2			
Blackbelly Eelpout	27.4	0.4	-	17.8	31.7	8.4				-		
Bocaccio												
Canary Rockfish									2.3		2.8	
Darkblotched Rockfish	0.7			3.4	0.4	0.2						
Dover Sole	7.7	5.6	2.4	14.6	24.1	14.6	0.4	7.5	34.6	92.2	15.4	0.2
English Sole	1.8	3.1	34.9	1.1		0.2	19.2	48.3				
Eulachon	1.8	0.2	0.5	14.0	4.2	0.3				0.1		
Flathead Sole	48.5	13.0	9.8	19.8	32.9	15.8		0.2	2.4	27.8	46.1	
Greenstriped Rockfish									4.0	1.4		13.3
Lingcod							3.6	8.4				18.7
Longnose Skate									6.7	1.5		10.8
Longspine Thornyhead												
North Pacific Spiny Dogfish									0.9		0.7	
Pacific Cod						1.6	2.6	2.4	7.5	2.0	8.3	14.1
Pacific Hake	-	3.4										
Pacific Halibut	7.6		15.1	4.0			22.0	17.6				
Pacific Ocean Perch	0.2	1.4	0.1		0.1	12.8		8.9	22.1	26.7	29.2	5.6
Pacific Sand Lance												
Pacific Sanddab							0.6					
Petrale Sole					1.7		20.6	0.4	2.3		3.2	
Prowfish												
Pygmy Rockfish												
Quillback Rockfish												
Redbanded Rockfish	0.2	3.2		0.3					254.6	13.8	11.9	0.8
Redstripe Rockfish		43.1									2.5	92.9
Rex Sole	3.4	7.2	11.4	2.0	2.6	3.1	8.9	38.4	8.3	36.9	11.3	5.3
Rosethorn Rockfish									0.7			8.0
Rougheye Rockfish									1.1	1.0		
Sablefish	47.5	8.9	10.7	33.3	30.3	26.7		22.4	1.1	19.4	7.2	
Sandpaper Skate												
Sharpchin Rockfish	-	0.5							1.6	0.1		35.9
Shortraker Rockfish												
Shortspine Thornyhead									1.8	0.9	0.8	0.4
Silvergray Rockfish		77.9	3.7					4.2	30.0	7.1	15.1	17.1
Slender Sole	0.5	0.2	0.2	0.6	0.4	0.5	-	0.4	-	0.5		
Southern Rock Sole								0.1				
Splitnose Rockfish												
Spotted Ratfish	2.7	2.3	1.8	5.2	7.0	3.2	5.5	3.6	5.4	5.1	3.1	14.1
Threadfin Sculpin												3.7
Walleye Pollock	2.2	10.5		5.4	13.3	7.4		4.2		1.8		
Widow Rockfish		11.4										
Yelloweye Rockfish		10.7										
Yellowmouth Rockfish		0.4										
Yellowtail Rockfish		322.9	6.7	3.9					1.8			
Other	12.8	4.6	4.8	11.5	5.8	9.3	20.1	42.5	47.1	6.1	10.9	22.3
Total	**296.0**	**595.0**	**181.9**	**334.7**	**356.7**	**171.0**	**127.2**	**376.3**	**539.3**	**335.2**	**233.8**	**286.8**

Common Name	44	45	46	47	48	49	50	51	52	53	54	55
Aleutian Skate												
Arrowtooth Flounder	18.3	11.8	52.3	218.7	98.5	170.2	336.9	11.1	95.4	413.9	257.2	1051.0
Aurora Rockfish												
Big Skate												
Bigfin Eelpout												
Bigmouth Sculpin												
Blackbelly Eelpout			-	0.1	0.3		-	2.0	1.5	1.5	-	0.9
Bocaccio												
Canary Rockfish												
Darkblotched Rockfish												
Dover Sole			2.5	29.8	7.8	3.4	41.9	58.1	63.6	37.0		1.3
English Sole					16.7	0.2		1.2		0.5	2.0	10.5
Eulachon				0.1				0.2		1.0		
Flathead Sole	8.8	22.0	18.9	3.0	6.8	1.5	7.4	6.9	9.1	1.3	22.0	37.9
Greenstriped Rockfish	2.0									1.5	0.6	
Lingcod	5.4			3.7							3.5	
Longnose Skate							3.9					
Longspine Thornyhead												
North Pacific Spiny Dogfish		4.9										
Pacific Cod	0.8	0.9	4.5	1.6	4.8	2.1	1.0	6.1	15.1	9.7	43.4	2.9
Pacific Hake												
Pacific Halibut			3.4		6.7			10.1	3.2		8.7	8.4
Pacific Ocean Perch	0.1	0.2	1500.0	78.3		6.8	38.1		0.1	0.2	0.1	0.2
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole				0.7	0.9						14.0	5.5
Prowfish												
Pygmy Rockfish												
Quillback Rockfish											21.0	
Redbanded Rockfish	1.7									1.3		
Redstripe Rockfish	215.1	220.2	414.8				20.0		0.7	0.9	15.6	0.5
Rex Sole	2.2	10.7	10.2	26.0	57.7	46.9	44.2	96.6	138.3	100.6	2.3	2.9
Rosethorn Rockfish	0.8											
Rougheye Rockfish	0.6	1.0										
Sablefish				12.1	11.9	92.5	52.8	4.5	40.9	81.3		1.2
Sandpaper Skate												
Sharpchin Rockfish	0.3									0.7	2.0	
Shortraker Rockfish												
Shortspine Thornyhead												
Silvergray Rockfish	14.2	1.0	22.1		11.1	3.7				2.6	23.4	
Slender Sole	0.2	0.2	0.4	0.6	0.9	1.1	1.4	0.2	0.3	0.5		0.1
Southern Rock Sole												
Splitnose Rockfish												0.3
Spotted Ratfish	2.4	2.6	4.1	4.0	5.7	4.2	13.8	0.5	1.6	0.4	0.7	1.8
Threadfin Sculpin											1.1	
Walleye Pollock		7.3	35.1	5.6	5.0	20.9	19.2	1.8	43.8	321.6	1.4	1.4
Widow Rockfish	0.8	0.9							0.8			
Yelloweye Rockfish											8.7	
Yellowmouth Rockfish			7.9								0.1	
Yellowtail Rockfish	10.0	2.5	2.5				8.5				48.5	3.8
Other	7.2	11.1	3.4	3.3	13.2	1.6	4.2	13.6	9.5	4.8	53.7	2.8
Total	**290.8**	**297.2**	**2082.0**	**387.5**	**247.9**	**355.1**	**593.2**	**212.8**	**423.9**	**981.5**	**530.1**	**1133.4**

Common Name	56	57	58	59	60	61	62	63	64	65	66	67
Aleutian Skate												
Arrowtooth Flounder	762.7		259.2	47.6	4.3	12.4	17.8	47.8	23.3	12.3	13.2	62.6
Aurora Rockfish												
Big Skate												
Bigfin Eelpout												1.2
Bigmouth Sculpin												
Blackbelly Eelpout	0.4		0.7									
Bocaccio												
Canary Rockfish				8.1				26.2				
Darkblotched Rockfish									1.4			0.4
Dover Sole	2.0		2.1	1.0			1.9		3.6	3.2	1.6	3.5
English Sole	10.5	0.2	17.9					18.2				
Eulachon									0.4	0.3	0.6	46.3
Flathead Sole	28.1		34.3	2.9	3.4				0.5			3.9
Greenstriped Rockfish				12.9	10.5	1.6	4.0	1.1				
Lingcod								2.0		1.2		
Longnose Skate									2.8	14.5	5.6	
Longspine Thornyhead												
North Pacific Spiny Dogfish	0.6		1.5	6.0		1.4	9.6	1.6	3.1			1.9
Pacific Cod	17.8	-		16.4	15.2	6.4				0.9	0.5	
Pacific Hake									4.6		1.7	
Pacific Halibut	24.7	4.0		6.1			11.3	3.4				
Pacific Ocean Perch			1.5	4.8	18.6	0.1	13.5		1.2	4.1	66.3	7.2
Pacific Sand Lance												
Pacific Sanddab		0.4										
Petrale Sole			1.8	4.9			1.9	16.5			0.8	
Prowfish									-			
Pygmy Rockfish				0.7	0.2	0.2						
Quillback Rockfish						0.8						
Redbanded Rockfish				0.1	0.5		0.9		9.3	15.7	26.0	16.7
Redstripe Rockfish				1.1	0.8	0.3						
Rex Sole	3.0		4.6	15.2	1.9	0.5	11.5	5.6	0.6	1.8	4.9	11.8
Rosethorn Rockfish					1.5	0.5						
Rougheye Rockfish					1.2					2.9	5.0	1.5
Sablefish	7.0		1.2				7.5	4.1	7.5	4.3	5.7	
Sandpaper Skate									2.8		1.2	0.8
Sharpchin Rockfish			0.3	1.7	9.6	0.3	0.2					
Shortraker Rockfish												
Shortspine Thornyhead									4.3	6.5	19.8	3.7
Silvergray Rockfish	2.2			52.5	11.4	2.9	13.1	29.7		3.0	22.4	9.4
Slender Sole			0.5	0.3			0.4	0.2	-			1.8
Southern Rock Sole		36.7										
Splitnose Rockfish					0.4						0.7	
Spotted Ratfish	0.5	4.6	9.9	2.2	0.5	2.3	5.5	1.2	2.3	1.1	1.6	0.2
Threadfin Sculpin				0.4	0.3	0.2						
Walleye Pollock	1.7		2.8	0.6	1.0		0.5			1.4	4.9	
Widow Rockfish												
Yelloweye Rockfish				6.9	4.6	7.0						
Yellowmouth Rockfish	0.4			2.7	0.8	0.2						
Yellowtail Rockfish							4.8	5.2				
Other	15.7	9.6	6.9	21.2	12.9	21.8	14.7	14.3	22.2	19.3	43.3	121.7
Total	**877.3**	**55.6**	**345.2**	**216.4**	**99.4**	**59.0**	**119.1**	**177.1**	**89.8**	**92.5**	**225.6**	**294.6**

Common Name	68	69	70	71	72	73	74	75	76	77	78	79
Aleutian Skate												
Arrowtooth Flounder	15.7	12.4	2.7	9.1	5.1	362.3	126.7	89.8	15.0	67.1	97.2	17.4
Aurora Rockfish												
Big Skate												
Bigfin Eelpout												
Bigmouth Sculpin												
Blackbelly Eelpout	-					0.1	1.5	1.7		-		-
Bocaccio												
Canary Rockfish								2.7				
Darkblotched Rockfish							0.4	0.3		0.1		0.2
Dover Sole	4.0		6.5	1.2	9.1	1.6	2.4	0.6		3.6		0.7
English Sole	5.0					0.6						
Eulachon		4.1	1.3	3.1	1.9		0.3	0.1				
Flathead Sole	20.8					2.9	2.6	28.0	0.2	8.8	0.8	0.1
Greenstriped Rockfish							0.6		4.3	0.7	0.7	
Lingcod						4.8						
Longnose Skate					10.5		12.8	7.5			12.3	
Longspine Thornyhead												
North Pacific Spiny Dogfish	5.2		2.8	2.2		2.7	1.2		2.6	2.7	1.7	20.1
Pacific Cod	4.7	0.9				15.1			1.0		1.1	
Pacific Hake		9.9	6.9	17.9	5.1							
Pacific Halibut							42.7					5.2
Pacific Ocean Perch		15.2	1.3	0.5	1.2	0.2	0.6	-	2.5	3.5	87.8	
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole						1.3			2.3		1.0	5.0
Prowfish		-										
Pygmy Rockfish												
Quillback Rockfish												
Redbanded Rockfish		6.6		1.2	2.3	6.0	4.0		18.1	5.6	0.7	1.5
Redstripe Rockfish										2.8	3.0	
Rex Sole	57.9	1.4	1.4		1.1	7.5	3.2	1.2	5.3	5.3	1.3	2.2
Rosethorn Rockfish		2.3										
Rougheye Rockfish		3.4				2.8			0.1			
Sablefish		5.0	3.7	3.8	13.1	0.4	0.9	0.6	4.0	3.1		5.5
Sandpaper Skate			1.1		1.3							
Sharpchin Rockfish							0.4		1.2	0.9	3.5	
Shortraker Rockfish		4.1										
Shortspine Thornyhead		11.2	4.2	8.3	6.1							
Silvergray Rockfish	16.2	109.0	7.7	4.4					5.1	24.2	4.2	1.7
Slender Sole		0.1				0.4	0.4	0.9	-	0.4		-
Southern Rock Sole												
Splitnose Rockfish												
Spotted Ratfish	3.0	0.2		0.6		4.2	0.1	0.1	1.6	1.2	0.9	1.3
Threadfin Sculpin												
Walleye Pollock	3.2	5.4				1.1			0.2			
Widow Rockfish	1.1											
Yelloweye Rockfish									3.2			
Yellowmouth Rockfish											91.0	
Yellowtail Rockfish	444.6											
Other	8.7	49.4	5.7	2.9	9.1	40.7	31.9	16.1	11.8	17.7	16.4	10.8
Total	**590.2**	**240.5**	**45.2**	**55.2**	**65.8**	**454.8**	**233.0**	**149.5**	**78.2**	**147.4**	**323.6**	**71.7**

Common Name	80	81	82	83	84	85	86	87	88	89	90	91
Aleutian Skate												
Arrowtooth Flounder	5.7	17.2	3.0	3.1			0.7			442.9	63.6	0.2
Aurora Rockfish												
Big Skate											2.9	
Bigfin Eelpout												
Bigmouth Sculpin												
Blackbelly Eelpout		-										
Bocaccio											4.2	
Canary Rockfish			16.1					0.7				
Darkblotched Rockfish										0.5		
Dover Sole	0.2									19.6	7.2	
English Sole				8.5	3.1	0.2	5.7	0.1	1.1	39.2	39.3	0.5
Eulachon		0.1										
Flathead Sole		-		0.2						1.7		
Greenstriped Rockfish	7.2		0.5									
Lingcod						2.0				4.9		
Longnose Skate												
Longspine Thornyhead												
North Pacific Spiny Dogfish	77.9		3.5	2.4	5.8	2.1	2.0	1.1		6.6	2.3	2.7
Pacific Cod	9.6		5.8	2.3	0.5	0.4	0.5		-	5.3	1.2	
Pacific Hake												
Pacific Halibut						10.3		5.5		2.4	9.4	6.1
Pacific Ocean Perch	7.7	1.1			0.5	0.8			-			
Pacific Sand Lance						-						
Pacific Sanddab						-			0.7			
Petrale Sole			12.8		2.7		6.3			20.6	2.2	4.4
Prowfish												
Pygmy Rockfish					0.1							
Quillback Rockfish					1.1	1.2		9.4	6.1	2.1		
Redbanded Rockfish	0.1											
Redstripe Rockfish						0.1		3.7	0.4			
Rex Sole	8.4		1.0	3.6			1.5			25.9	44.1	0.5
Rosethorn Rockfish												
Rougheye Rockfish												
Sablefish	10.2	1.3								6.4		
Sandpaper Skate		0.2										
Sharpchin Rockfish	1.0		0.3									
Shortraker Rockfish												
Shortspine Thornyhead												
Silvergray Rockfish	23.8		36.3	1.4				3.6		13.0	7.6	
Slender Sole										0.8	0.2	
Southern Rock Sole				4.2	2.2	4.0	2.7	0.1	6.1			7.3
Splitnose Rockfish												
Spotted Ratfish	2.1	0.4	4.7	2.2	2.6	12.7	4.4	3.6	15.1	0.4	3.0	7.4
Threadfin Sculpin												
Walleye Pollock	0.8			3.7		0.2	3.4		-	129.4	104.9	-
Widow Rockfish												
Yelloweye Rockfish	5.4											
Yellowmouth Rockfish												
Yellowtail Rockfish			5.6									
Other	11.1	13.7	7.1	13.2	9.4	21.0	18.2	1.0	2.0	4.7	30.2	8.7
Total	**171.2**	**33.9**	**96.8**	**45.0**	**27.8**	**55.1**	**45.3**	**28.5**	**31.6**	**726.4**	**322.2**	**37.9**

Common Name	92	93	94	95	96	97	98	99	100	101	102	103
Aleutian Skate												
Arrowtooth Flounder	3.2	3.3	51.1	28.3	3.6	22.9	104.4	20.5	8.6	0.9	1.1	2578.3
Aurora Rockfish												
Big Skate								0.2				
Bigfin Eelpout												
Bigmouth Sculpin												
Blackbelly Eelpout	-			0.1								
Bocaccio									4.6			
Canary Rockfish		73.6				6.9	1.5					
Darkblotched Rockfish									0.8			
Dover Sole			8.0	9.4	0.3	0.5	50.0	1.3	0.7	1.8	1.2	50.7
English Sole	4.7	0.4	25.3	26.8	12.0	20.4	1.4					
Eulachon												0.9
Flathead Sole			0.6	0.2								
Greenstriped Rockfish											4.6	
Lingcod							6.5			13.3		
Longnose Skate							4.5					
Longspine Thornyhead												
North Pacific Spiny Dogfish		4.0		13.6	7.2		6.6				2.1	10.6
Pacific Cod	4.0	1.8	2.5	2.0	5.8	5.4	0.8		1.9			
Pacific Hake												
Pacific Halibut	8.6	4.5	6.7	10.0	7.5	9.1	9.7					
Pacific Ocean Perch		-					6.3	60.6	74.7	356.5	99.5	0.6
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole	3.6	4.0	4.6	15.8	2.1	2.8						
Prowfish												
Pygmy Rockfish												
Quillback Rockfish												
Redbanded Rockfish							61.7	9.9	0.7	4.6	2.2	
Redstripe Rockfish								6.7			1.4	
Rex Sole	7.6	3.5	29.6	18.9	6.8	18.6	26.7	1.8	6.8	5.9	3.0	30.2
Rosethorn Rockfish												
Rougheye Rockfish												
Sablefish							11.0		2.8	2.0		34.5
Sandpaper Skate												
Sharpchin Rockfish			-									
Shortraker Rockfish												
Shortspine Thornyhead							2.0		5.2	8.2	12.2	
Silvergray Rockfish	8.9	20.9	64.4	23.1	2500.0	273.6	61.3	13.7	2.5	23.1	298.7	27.1
Slender Sole			0.2				0.1			0.1		
Southern Rock Sole	2.3											
Splitnose Rockfish									0.9	1.2	0.4	
Spotted Ratfish	0.4	2.6		0.8	0.4	0.2	0.5	0.6	1.2	0.6	6.1	7.4
Threadfin Sculpin			0.2									
Walleye Pollock	0.7		10.0	10.3	0.6	10.1	20.6	5.6	8.0	5.1	4.7	5.0
Widow Rockfish									0.8	1.7	14.7	
Yelloweye Rockfish												
Yellowmouth Rockfish								3.1		2.6		
Yellowtail Rockfish			1.1			7.0	21.8					
Other	6.0	7.7	32.4	38.9	3.0	15.6	24.6	0.8	5.4	1.4	0.1	4.8
Total	**49.9**	**126.2**	**236.7**	**198.0**	**2549.2**	**393.0**	**422.0**	**124.9**	**125.6**	**429.2**	**452.1**	**2750.0**

Common Name	104	105	106	107	108	109	110	111	112	113	114	115
Aleutian Skate												
Arrowtooth Flounder	98.9	332.8	55.3	349.9	126.1	9.3	4.8	106.3	204.5	128.3	104.5	214.6
Aurora Rockfish												
Big Skate												
Bigfin Eelpout			0.2									
Bigmouth Sculpin												
Blackbelly Eelpout	1.7	0.3	0.6	0.4				1.3	8.8	4.7	21.2	11.4
Bocaccio												
Canary Rockfish								10.3	3.8	2.1		
Darkblotched Rockfish			0.5	0.3							0.2	
Dover Sole	17.8	16.6	80.8	29.4	1.5			3.2	27.6	21.9	12.3	23.5
English Sole	0.5			0.7	50.9	26.2	20.7	17.8				
Eulachon								3.5		0.5	4.9	0.2
Flathead Sole	4.9		1.0	2.9	13.8	1.6		7.2	26.7	29.7	18.3	51.2
Greenstriped Rockfish	1.2	1.4	3.6		0.3			0.4				
Lingcod					10.0	5.6	3.7	2.1	5.2			9.8
Longnose Skate									6.0		3.2	7.1
Longspine Thornyhead												
North Pacific Spiny Dogfish									1.8	1.8		2.4
Pacific Cod	1.8		2.4	4.5	51.9		9.2	7.9				
Pacific Hake								-				1.5
Pacific Halibut		7.8			3.9				3.3			
Pacific Ocean Perch	0.1	1.5	83.3	20.1	0.6			-	1.1	0.2	0.3	1.0
Pacific Sand Lance												
Pacific Sanddab						1.3	56.8					
Petrale Sole							2.0					
Prowfish												
Pygmy Rockfish	0.1											
Quillback Rockfish								4.0	1.3			
Redbanded Rockfish			2.2									
Redstripe Rockfish	5.3	5.2	2.1	1.3	0.3			0.3				
Rex Sole	29.0	43.8	28.1	14.9	34.8	3.5	4.6	3.8	8.5	4.4	7.6	9.2
Rosethorn Rockfish												
Rougheye Rockfish			0.4						0.9	0.7	0.5	0.8
Sablefish	14.1	19.1	70.9	17.7	18.8			0.9	10.1	2.3	10.9	3.8
Sandpaper Skate												
Sharpchin Rockfish	1.0	0.6	0.6									
Shortraker Rockfish												
Shortspine Thornyhead												
Silvergray Rockfish	5.2	3.8	56.8	16.0	8.6	2.8		0.9				
Slender Sole	0.3		0.7		0.5			0.1	1.7	2.3	1.6	1.5
Southern Rock Sole							3.8					
Splitnose Rockfish												0.1
Spotted Ratfish	6.3	0.6	1.9	4.2	3.9	9.5	18.2	2.7	8.1	4.2	3.0	11.4
Threadfin Sculpin					0.7							
Walleye Pollock	2.2	287.1	201.2	65.3	4.4	0.9	0.1	2.1		1.2	1.0	5.5
Widow Rockfish												
Yelloweye Rockfish												
Yellowmouth Rockfish												
Yellowtail Rockfish	59.2			6.1								
Other	9.5	6.5	18.2	6.9	17.8	34.0	7.0	9.9	10.4	9.8	9.1	20.3
Total	**258.9**	**727.2**	**610.7**	**540.6**	**348.8**	**94.7**	**131.0**	**184.7**	**329.8**	**214.1**	**198.6**	**375.0**

Common Name	116	117	118	119	120	121	122	123	124	125	126	127
Aleutian Skate												
Arrowtooth Flounder	163.5	679.7	254.8	409.8	68.7	109.3	34.5	38.3	60.9	35.6	23.6	55.1
Aurora Rockfish												
Big Skate									10.2			
Bigfin Eelpout	0.4	0.3								0.6	1.1	
Bigmouth Sculpin												
Blackbelly Eelpout	0.5	0.7	5.7	2.0	0.4	-	-					
Bocaccio						4.4						
Canary Rockfish					1.7	3.1						3.8
Darkblotched Rockfish	9.3	1.2								0.9		
Dover Sole	54.0	55.3	84.8	117.6	56.4	33.8	18.4	23.0		23.7	15.4	12.5
English Sole		0.3		0.7		0.8		0.5				0.3
Eulachon	6.1		0.7		0.1			0.1				
Flathead Sole	38.3	5.7	31.7	16.9	16.7	44.1	4.3	12.4			68.5	0.9
Greenstriped Rockfish			0.3			1.1			40.6			15.5
Lingcod									3.7			
Longnose Skate	6.6		19.6	13.9			1.6					12.7
Longspine Thornyhead												
North Pacific Spiny Dogfish	2.8	4.2	1.7	5.3	1.8	4.6	9.6	1.7		8.3	9.0	14.5
Pacific Cod			2.3	7.5			16.9	16.9	2.6	48.8	5.5	22.7
Pacific Hake	2.0		4.0	2.3	33.8	1.3	4.2	12.0		12.0	11.1	
Pacific Halibut				2.7			5.7		6.8	3.4	3.5	6.8
Pacific Ocean Perch	57.2	70.2	8.0	6.5	1.2	1431.3	143.5	72.3	4.3	109.1	57.8	5.7
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole						0.7				2.4		2.5
Prowfish												
Pygmy Rockfish												
Quillback Rockfish												
Redbanded Rockfish	32.8	6.7	12.5	5.6	1.2		13.4	2.1		31.7	8.5	
Redstripe Rockfish		1.1	0.8									
Rex Sole	13.9	8.8	36.7	38.4	26.6	19.4	45.6	23.0	0.1	42.8	79.1	79.3
Rosethorn Rockfish												
Rougheye Rockfish	18.5	0.5			1.4						1.4	
Sablefish	36.9	28.2	7.3	5.2	8.4	7.9	4.3	0.8			11.0	8.6
Sandpaper Skate											0.4	
Sharpchin Rockfish												
Shortraker Rockfish												
Shortspine Thornyhead	37.9	1.8	14.5	3.1	9.2	1.9	28.6	0.7		24.3	10.4	
Silvergray Rockfish		4.7	1.9	2.8	2.5	74.6	2.2	8.1	10.8		6.0	60.3
Slender Sole	1.4	0.4	4.0	0.5	2.2	1.4	1.8	0.9		0.3	4.1	0.5
Southern Rock Sole												
Splitnose Rockfish						0.2				0.6	0.4	
Spotted Ratfish	5.3	1.5	2.4	0.3	0.9	0.7	1.3	0.4	6.7	3.7	2.2	1.5
Threadfin Sculpin									2.5	0.2	0.2	
Walleye Pollock		25.4	1.6	4.0	3.6	7.8	1.5	16.2		10.9	9.5	1.4
Widow Rockfish						4.5						1.9
Yelloweye Rockfish												
Yellowmouth Rockfish						12.0	3.6	25.4	1.4		4.3	
Yellowtail Rockfish		1.8				10.8		6.2				37.7
Other	7.6	18.9	7.1	24.1	6.5	2.4	2.4	22.0	7.4	3.0	8.0	0.1
Total	**494.9**	**917.1**	**502.5**	**669.1**	**243.2**	**1777.9**	**343.3**	**283.0**	**158.0**	**362.3**	**340.9**	**344.5**

Common Name	128	129	130	131	132	133	134	135	136	137	138	139
Aleutian Skate												
Arrowtooth Flounder	13.0	3.1	9.3	7.6	16.2	8.6	7.7	8.7	14.5	20.6	6.2	16.5
Aurora Rockfish												
Big Skate												
Bigfin Eelpout					0.5			-	0.1			0.4
Bigmouth Sculpin												
Blackbelly Eelpout					-	0.2	-		-	0.4		
Bocaccio												
Canary Rockfish	1.6	1.7										
Darkblotched Rockfish									0.8			
Dover Sole	10.7	15.1	3.1	9.4	4.1	1.9	7.0	2.6	3.0	6.1	13.2	8.4
English Sole	1.6						0.5					
Eulachon			-	0.4	0.2	0.2			0.1	1.8		0.3
Flathead Sole									0.5			
Greenstriped Rockfish	45.2	19.1										
Lingcod	6.2											
Longnose Skate			13.8							0.8	1.6	
Longspine Thornyhead												
North Pacific Spiny Dogfish	11.5	9.9			4.5		1.8	12.2	8.9			
Pacific Cod	30.6	0.8					1.5	4.1				
Pacific Hake		3.1	8.3			0.2				2.5		
Pacific Halibut	3.7											
Pacific Ocean Perch	4.5	695.4	2.2	3.3	18.5	12.6	24.3	11.1	29.5	1.9	9.4	1.9
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole												
Prowfish												
Pygmy Rockfish	-											
Quillback Rockfish												
Redbanded Rockfish		8.1	2.0	1.0	3.6	4.4	4.3	14.7	0.9		4.3	3.6
Redstripe Rockfish												
Rex Sole	7.7	18.4		0.6	2.9	2.8	10.0	2.9	4.4	4.7	6.7	2.6
Rosethorn Rockfish		8.5										
Rougheye Rockfish			2.4	1.1	2.0							
Sablefish	2.9	27.5	114.5	4.7	1.2					1.0	4.2	3.0
Sandpaper Skate												
Sharpchin Rockfish		15.2										
Shortraker Rockfish					9.8							
Shortspine Thornyhead		51.0	26.7	9.9	3.7	0.8	1.3	1.4	1.2	4.7	14.8	8.8
Silvergray Rockfish	36.9	4.8				4.2	31.4	34.0	45.3		7.7	
Slender Sole					0.8			0.3	0.6	0.2		0.2
Southern Rock Sole												
Splitnose Rockfish		38.8		0.3	0.3						0.5	
Spotted Ratfish	1.2	-							0.9	0.7		
Threadfin Sculpin												
Walleye Pollock	2.0	13.5			21.2	11.0	18.6	11.9	4.3			
Widow Rockfish												
Yelloweye Rockfish												
Yellowmouth Rockfish	2.2	24.6										
Yellowtail Rockfish	10.9	0.8										
Other	6.4	9.6	1.7	9.5	17.5	9.6	10.8	4.0	14.7	16.1	21.3	3.0
Total	**199.0**	**968.9**	**184.0**	**47.7**	**107.0**	**56.5**	**119.1**	**107.8**	**129.6**	**61.4**	**89.8**	**48.7**

Common Name	140	141	142	143	144	145	146	147	148	149	150	151
Aleutian Skate												
Arrowtooth Flounder	9.2	14.3	15.6	53.5	18.2	15.9	5.7	0.6	383.3	26.5	51.2	19.8
Aurora Rockfish												
Big Skate												
Bigfin Eelpout	0.2									0.1	0.1	
Bigmouth Sculpin						2.2			7.0			
Blackbelly Eelpout		0.2	0.6	0.1		-						
Bocaccio							4.0					
Canary Rockfish												
Darkblotched Rockfish								0.6				
Dover Sole	10.7	0.8	6.8	4.0		13.8	5.5	2.5	18.2	9.3	8.1	23.2
English Sole		16.9	7.8	9.4								
Eulachon	0.2					0.7	0.3	1.8		0.8	23.0	1.5
Flathead Sole		13.1	25.1	35.4		5.9					0.3	0.8
Greenstriped Rockfish					1.8	0.6						
Lingcod												2.4
Longnose Skate												
Longspine Thornyhead												
North Pacific Spiny Dogfish		1.9		3.0	3.0							
Pacific Cod				3.4				2.7	21.9			
Pacific Hake	3.4						16.7	8.1			1.9	1.4
Pacific Halibut		3.2										4.4
Pacific Ocean Perch	1.7				1.1	13.9	1.1	562.5	98.9	186.9	8.4	5.5
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole			1.0	2.5		1.0						
Prowfish:												
Pygmy Rockfish					2.0							
Quillback Rockfish												
Redbanded Rockfish						4.9	6.0	17.1	35.8	4.2	4.0	30.6
Redstripe Rockfish					0.4	1.5		0.7				
Rex Sole	0.5	23.1	44.5	44.6	4.6	31.5	1.3	1.6	8.1	22.8	2.5	13.6
Rosethorn Rockfish					3.2		0.7	3.1	5.3	0.2		
Rougheye Rockfish							1.4					
Sablefish	3.9		2.5	3.1	0.5		3.7		3.7			1.1
Sandpaper Skate												
Sharpchin Rockfish					1.8	-		183.3	454.6	4.6		
Shortraker Rockfish												
Shortspine Thornyhead	11.1	-	0.6			7.6	18.7	10.2	4.9	2.1	0.2	1.6
Silvergray Rockfish		20.3	12.2	64.4	60.8	15.5	6.7	143.6	1307.0	71.7	14.0	16.6
Slender Sole		0.6	0.3			1.1		0.3		0.1	0.3	0.7
Southern Rock Sole												
Splitnose Rockfish							0.3					
Spotted Ratfish	1.0	0.9	2.8	4.6	1.2				7.5	0.5		
Threadfin Sculpin												
Walleye Pollock			0.2	-		8.2	0.6	3.2	3.5	17.3	2.8	2.8
Widow Rockfish								0.7				
Yelloweye Rockfish					17.3				2.6			
Yellowmouth Rockfish					0.4			1.4	6.4			
Yellowtail Rockfish		7.0	2.9	8.2	2.1							
Other	12.2	14.4	12.5	19.9	0.8	16.8	6.1	5.6	11.5	10.4	21.9	7.3
Total	**54.2**	**116.8**	**135.2**	**256.2**	**119.3**	**141.1**	**78.7**	**949.6**	**2380.1**	**357.6**	**138.5**	**133.1**

Common Name	152	153	154	155	156	157	158	159	160	161	162	163
Aleutian Skate												
Arrowtooth Flounder	29.2	10.5	2.1	10.8	12.9	6.4	11.4	3.9	3.6	76.3	30.7	54.5
Aurora Rockfish												
Big Skate												42.5
Bigfin Eelpout								0.1				
Bigmouth Sculpin											3.8	
Blackbelly Eelpout										0.1		
Bocaccio												
Canary Rockfish		19.0			20.4							236.8
Darkblotched Rockfish										0.3		
Dover Sole	5.8				0.6		2.9	2.7	5.6	11.2	0.5	
English Sole		5.5		2.8	3.9			0.5			33.8	0.3
Eulachon	0.1							0.1	0.2	10.9		
Flathead Sole				-	0.5					3.9	5.8	
Greenstriped Rockfish					0.7	1.1					4.3	16.7
Lingcod		1.6	10.2				9.0				14.0	0.9
Longnose Skate							13.4	9.0			3.2	
Longspine Thornyhead												
North Pacific Spiny Dogfish		2.1	2.6	6.1	9.4		4.1	10.3	2.3	0.8	1.3	14.1
Pacific Cod		505.5	0.1	12.0	3.2	9.5		2.1		1.0	13.2	11.3
Pacific Hake	1.3							1.6	9.8	1.4		
Pacific Halibut			5.3	4.7		7.8			10.0		10.4	
Pacific Ocean Perch	19.1					2.4	29.3	37.7	1.2	0.2	188.8	
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole			0.7	3.1	1.9			0.7		0.7	2.9	4.5
Prowfish												0.6
Pygmy Rockfish			0.6									0.3
Quillback Rockfish			0.6	0.7								
Redbanded Rockfish	5.7	2.6					1.3	0.7			11.9	
Redstripe Rockfish						6.9					1.2	1.4
Rex Sole	1.8	3.1	0.3	0.8	3.8	8.1	3.1	5.9	5.7	1.1	12.7	
Rosethorn Rockfish	0.5											0.9
Rougheye Rockfish	0.2											
Sablefish	4.0							4.9	2.3			
Sandpaper Skate												
Sharpchin Rockfish			-			3.4					26.1	18.2
Shortraker Rockfish												
Shortspine Thornyhead	7.0	0.7					6.1	0.2	1.4			
Silvergray Rockfish	10.9	682.0	11.0	49.1	205.4	32.1	40.9	33.3	2.5		742.6	23.0
Slender Sole								0.5	0.2		0.4	
Southern Rock Sole			1.6	1.2								
Splitnose Rockfish	0.3						1.8		0.9			
Spotted Ratfish	0.8	5.0	2.5	3.3	2.6	1.2		1.9		1.5	2.0	6.0
Threadfin Sculpin												-
Walleye Pollock	7.3	0.3	-	0.8	5.9	0.7	20.8	26.4			0.9	0.1
Widow Rockfish		134.5									3.9	6.2
Yelloweye Rockfish		2.1									5.1	
Yellowmouth Rockfish										0.4	335.7	2.4
Yellowtail Rockfish					3.5	85.1					410.7	211.8
Other	13.8	3.8	3.7	17.8	21.4	52.1	26.2	7.9	11.5	5.7	9.5	19.1
Total	**107.7**	**1378.2**	**41.3**	**113.1**	**296.1**	**216.8**	**170.3**	**150.4**	**57.1**	**115.2**	**1875.5**	**671.6**

Common Name	164	165	166	167	168	169	170	171	172	173	174	175
Aleutian Skate												
Arrowtooth Flounder	3.9	6.3						62.1	66.8	15.4	70.0	6.6
Aurora Rockfish												
Big Skate				17.4	4.2							
Bigfin Eelpout												
Bigmouth Sculpin												
Blackbelly Eelpout								0.1				
Bocaccio										6.0		
Canary Rockfish	166.6									1.5		
Darkblotched Rockfish												
Dover Sole		2.0						15.0	5.4	1.0	3.3	
English Sole	3.3	3.9				0.3		3.9				
Eulachon												
Flathead Sole									0.7			
Greenstriped Rockfish								3.7	10.4			
Lingcod	0.9		39.7									11.1
Longnose Skate										4.4	-	
Longspine Thornyhead												
North Pacific Spiny Dogfish	12.8	3.2	25.7	33.6	1.2	1.0						
Pacific Cod	2.2							5.3	11.4	3.3		
Pacific Hake										13.9	160.0	
Pacific Halibut	4.6	3.5	34.2	9.0	4.0	27.8					5.9	8.9
Pacific Ocean Perch									2.9	1051.2	270.0	
Pacific Sand Lance				0.1	0.3	76.2						
Pacific Sanddab		0.2		0.1	0.2	0.6						
Petrale Sole	2.7	1.4	3.4	2.7		0.9						13.6
Prowfish	7.9											
Pygmy Rockfish								0.2				
Quillback Rockfish												
Redbanded Rockfish									1.4	20.5	10.0	
Redstripe Rockfish								30.3	61.2			
Rex Sole	0.5							36.7	1.9	2.1	2.5	
Rosethorn Rockfish	0.5							0.3	1.2	13.9	1.4	
Rougheye Rockfish											2.0	
Sablefish	5.8								7.7		-	
Sandpaper Skate								0.1				
Sharpchin Rockfish								12.4	13.1	6.8	0.7	
Shortraker Rockfish												
Shortspine Thornyhead									6.4	40.6	70.0	
Silvergray Rockfish	38.4							21.9	194.5	7.0	1.5	
Slender Sole								0.1	0.3			
Southern Rock Sole			15.4	10.3	28.5	16.6						125.5
Splitnose Rockfish										0.6		
Spotted Ratfish	4.6	8.1	1.9			17.2		2.5	3.3	2.4	2.5	2.0
Threadfin Sculpin								1.2	2.3	0.3		
Walleye Pollock		2.1				0.1		0.2	1.0	12.6		-
Widow Rockfish										4.1		
Yelloweye Rockfish	20.8							2.0	2.0			
Yellowmouth Rockfish	2.0								34.9	6.5	3.0	
Yellowtail Rockfish	3.8							5.9	10.1			
Other	17.9	2.9	0.4	8.9	7.3	18.3		7.6	11.9	3.0	7.5	0.4
Total	**299.2**	**33.7**	**120.8**	**82.1**	**45.7**	**158.9**		**211.4**	**450.8**	**1217.1**	**610.4**	**168.1**

Common Name	176	177	178	179	180	181	182	183	184	185	186	187
Aleutian Skate					3.0							
Arrowtooth Flounder	0.2	2.7		46.2	13.2	84.1	74.0	20.0	28.5	0.6	3.9	4.8
Aurora Rockfish												
Big Skate												
Bigfin Eelpout								0.5				
Bigmouth Sculpin												
Blackbelly Eelpout						-	-					
Bocaccio												
Canary Rockfish				501.2	7.1							
Darkblotched Rockfish							0.4					
Dover Sole				5.3	1.1	9.1	12.5	3.5	23.3	5.0	36.3	1.0
English Sole		0.4	0.4	3.5								
Eulachon					0.1	21.3	0.4					
Flathead Sole												
Greenstriped Rockfish			0.5	89.6								
Lingcod		4.0	6.7									
Longnose Skate				3.4				1.2			6.6	
Longspine Thornyhead												
North Pacific Spiny Dogfish				9.7			1.0					
Pacific Cod				7.6						6.9		
Pacific Hake					15.8	14.4	1.6	17.6	34.5		22.0	
Pacific Halibut	244.4	4.2	5.6	2.8	3.4						12.1	
Pacific Ocean Perch				2.3	68.7	13.6	56.8	17.8	43.5	734.6	18.7	7.4
Pacific Sand Lance												
Pacific Sanddab		4.8										
Petrale Sole		0.7		18.9								
Prowfish								0.1				
Pygmy Rockfish			9.0									
Quillback Rockfish		0.9										
Redbanded Rockfish						0.9	4.4	1.0	2.5	6.3	1.1	
Redstripe Rockfish			3.8	6.6						0.5		
Rex Sole				31.2	0.3		0.2	-	0.2	2.3	10.7	0.6
Rosethorn Rockfish			0.8							5.0		
Rougheye Rockfish					1.3	0.3	0.9	0.2	1.8	3.3	4.0	2.8
Sablefish				9.2	3.0	20.9	76.8	13.3	25.3		13.4	27.8
Sandpaper Skate								1.3				
Sharpchin Rockfish			0.3	0.3		0.1				15.5		
Shortraker Rockfish					4.0							
Shortspine Thornyhead					29.5	8.8	9.1	13.4	10.8	67.9	10.6	3.4
Silvergray Rockfish			19.6	52.7		1.7				35.7		
Slender Sole										-		
Southern Rock Sole	8.7	4.1										
Splitnose Rockfish					1.6	0.3			2.8	1.7		
Spotted Ratfish	176.5	2.1	0.4	2.7		0.8	1.2				4.1	
Threadfin Sculpin												
Walleye Pollock				8.2	-	-	-	-	0.1	0.8	9.1	
Widow Rockfish				13.6								
Yelloweye Rockfish			16.0									
Yellowmouth Rockfish			0.5	1.8		1.3				4.0		
Yellowtail Rockfish				433.9								
Other	0.2	3.5	7.7	2.0	38.4	19.5	12.8	20.0	10.3	2.6	8.8	4.7
Total	**429.9**	**27.5**	**71.5**	**1252.4**	**190.7**	**196.9**	**252.2**	**109.6**	**183.5**	**892.5**	**161.3**	**52.5**

Common Name	188	189	190	191	192	193	194	195	196	197	198	199
Aleutian Skate												
Arrowtooth Flounder	2.1	28.1	1.3	5.8	7.8	20.8	0.1	1.6	82.5	15.7	72.3	11.3
Aurora Rockfish												
Big Skate												
Bigfin Eelpout												
Bigmouth Sculpin												
Blackbelly Eelpout												
Bocaccio												
Canary Rockfish						44.9	6.6					
Darkblotched Rockfish												
Dover Sole	4.1	28.0	1.7	35.4	10.6				0.7			
English Sole												
Eulachon												
Flathead Sole												
Greenstriped Rockfish			0.7			1.3		6.8		0.4	1.0	
Lingcod							2.0					
Longnose Skate	4.8	34.8		15.1	10.8				14.3			
Longspine Thornyhead												
North Pacific Spiny Dogfish						2.6			4.8		3.0	1.5
Pacific Cod			2.4			5.3	-	15.1	4.9	8.8	9.2	0.7
Pacific Hake	38.8	35.1	3.2	36.2	40.1							
Pacific Halibut		28.0	9.9							3.2		8.7
Pacific Ocean Perch	2.2	3.8	446.2	40.6	4.1							
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole						3.5		2.4	6.6		2.5	2.9
Prowfish												
Pygmy Rockfish												
Quillback Rockfish												
Redbanded Rockfish			0.6	2.0								
Redstripe Rockfish												
Rex Sole	1.2	14.1	4.9	20.2	5.0	1.2		0.4	8.6	2.5	4.9	1.0
Rosethorn Rockfish												
Rougheye Rockfish	10.2	12.5	1.4	10.9	1.7							
Sablefish	106.8	11.7		65.9	45.4							
Sandpaper Skate	0.8				0.8							
Sharpchin Rockfish			9.5				0.1	0.1		0.2		
Shortraker Rockfish		28.9		13.1								
Shortspine Thornyhead	13.7	26.4	11.8	37.8	14.9							
Silvergray Rockfish			42.0			69.5	8.5	25.2	22.3	12.4	43.0	14.6
Slender Sole							0.2	0.2				
Southern Rock Sole												
Splitnose Rockfish												
Spotted Ratfish	0.6	1.2	0.8	2.5	2.3	29.4	1.6	3.9	7.2	1.1	0.8	3.4
Threadfin Sculpin												
Walleye Pollock	0.8	24.4	2.6				0.1	-	0.6	0.2	0.7	0.5
Widow Rockfish												
Yelloweye Rockfish										1.9		
Yellowmouth Rockfish												
Yellowtail Rockfish										25.3		
Other	14.7	198.1	3.7	249.2	17.6	7.0	1.8	7.5	2.3	4.6	6.6	1.5
Total	**200.9**	**475.0**	**542.8**	**534.6**	**161.3**	**185.5**	**21.1**	**63.3**	**154.9**	**76.4**	**144.0**	**46.2**

Common Name	200	201	202	203	204	205	206	207	208	209	210	211
Aleutian Skate												
Arrowtooth Flounder	2.9	1.5	1.1	10.8		25.8	2.5	53.1	8.1	69.3	42.8	21.4
Aurora Rockfish												
Big Skate												
Bigfin Eelpout										0.1		
Bigmouth Sculpin												
Blackbelly Eelpout						-		-		-	-	
Bocaccio												
Canary Rockfish				3.9			4.5		14.0			
Darkblotched Rockfish												
Dover Sole						1.3	0.4	4.2			5.9	49.8
English Sole												
Eulachon								10.1	0.1	47.2	6.7	0.1
Flathead Sole												
Greenstriped Rockfish					1.0		1.7		1.0			
Lingcod				10.0	1.4				4.5			
Longnose Skate						2.8					15.1	
Longspine Thornyhead												
North Pacific Spiny Dogfish			3.3	4.7		1.5	2.5		12.5	3.8	1.2	
Pacific Cod	-		-	-	2.9	3.6	32.3	-	84.9			
Pacific Hake												38.5
Pacific Halibut	2.4		7.0		8.5				6.8			
Pacific Ocean Perch						9.2	0.3		1.0	5.4	4.1	2.1
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole	-		2.2			1.6	2.9					
Prowfish												
Pygmy Rockfish					0.7							
Quillback Rockfish												
Redbanded Rockfish										1.5	4.1	
Redstripe Rockfish												
Rex Sole						33.5	0.5	0.6		1.6	3.0	28.2
Rosethorn Rockfish					0.1							
Rougheye Rockfish											8.8	
Sablefish								1.0		2.4	3.6	12.8
Sandpaper Skate												
Sharpchin Rockfish		-			0.8	0.1	0.9					
Shortraker Rockfish											12.7	5.7
Shortspine Thornyhead								6.6	0.2	4.5	15.4	9.8
Silvergray Rockfish	2.1		5.3	2.6	14.2	3.5	48.9		173.0	4.7		
Slender Sole						0.2					0.2	
Southern Rock Sole												
Splitnose Rockfish								1.2	0.5	0.7	18.6	1.1
Spotted Ratfish	18.6	13.4	47.8	6.2	12.8	3.8	14.1	0.8	6.4			0.6
Threadfin Sculpin					0.1							
Walleye Pollock	-			-		2.9	0.3		5.2	2.9	0.6	
Widow Rockfish							2.3					
Yelloweye Rockfish					10.0							
Yellowmouth Rockfish												
Yellowtail Rockfish									2.0			
Other	3.7	3.6	5.9	13.1	7.6	54.8	145.6	9.0	5.2	12.3	12.5	22.3
Total	**29.7**	**18.5**	**72.5**	**51.4**	**60.0**	**144.6**	**259.7**	**86.5**	**325.1**	**156.4**	**155.3**	**192.4**

Common Name	212	213	214	215	216	217	218	219	220	221	222	223
Aleutian Skate												
Arrowtooth Flounder	36.7	8.9		10.7	17.7	3.9	18.5	217.2	212.7	148.0	13.0	6.2
Aurora Rockfish												
Big Skate												
Bigfin Eelpout	0.1			0.3		0.6	0.5	0.2		0.5	0.6	
Bigmouth Sculpin												
Blackbelly Eelpout												
Bocaccio												
Canary Rockfish												
Darkblotched Rockfish					2.0			0.6				
Dover Sole	12.1	1.1		4.3	4.9	5.6	1.4				29.3	0.4
English Sole												
Eulachon	0.1											
Flathead Sole												
Greenstriped Rockfish		5.1										
Lingcod												
Longnose Skate	3.2				1.6		1.4	12.1	18.1	12.8	5.5	2.5
Longspine Thornyhead												
North Pacific Spiny Dogfish		1.8						4.3	1.5	2.3		
Pacific Cod		19.2					1.4				7.4	
Pacific Hake				15.1	13.1	30.0	34.8	24.3	27.9	12.6	3.4	20.0
Pacific Halibut	3.8				5.8						2.8	
Pacific Ocean Perch	14.8	7.7		680.3	130.8	235.8	458.7	137.7	185.5	169.2	387.8	201.4
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole		2.5										
Prowfish												
Pygmy Rockfish												
Quillback Rockfish												
Redbanded Rockfish		2.0		2.6	3.6	4.2	15.9	2.1	0.4		82.5	13.4
Redstripe Rockfish				1.0								
Rex Sole	3.8	0.7		9.4	6.0	10.2	0.3				6.9	1.1
Rosethorn Rockfish		1.0				3.0	0.2				0.7	2.8
Rougheye Rockfish	8.7						0.9	3.0	7.3	6.1	7.1	0.9
Sablefish	5.2			6.2	6.0	2.2	7.7	3.3	3.0	2.6	6.1	
Sandpaper Skate						1.2	0.6					1.2
Sharpchin Rockfish		0.6			0.2					0.3		
Shortraker Rockfish												
Shortspine Thornyhead	6.6	0.8		20.0	42.9	18.2	69.0	21.2	30.3	35.1	109.3	19.8
Silvergray Rockfish				1.1							2.1	
Slender Sole				0.2	0.4	-					0.2	
Southern Rock Sole												
Splitnose Rockfish	30.2	0.4		27.2	19.7	1.0	1.0	0.4	2.2	3.4	1.0	
Spotted Ratfish		6.8		0.9	0.5	1.2		2.4			1.3	
Threadfin Sculpin		0.1		0.1								
Walleye Pollock	-	0.7										
Widow Rockfish				3.6								
Yelloweye Rockfish												
Yellowmouth Rockfish				106.2	2.2	7.7	3.4	0.7				1.4
Yellowtail Rockfish												
Other	27.9	6.6		19.3	14.6	6.4	25.0	14.4	25.9	36.6	17.1	1.5
Total	**153.3**	**66.1**		**908.5**	**272.1**	**331.1**	**640.7**	**443.9**	**514.7**	**429.4**	**683.9**	**272.6**

Common Name	224	225	226	227	228	229	230	231	232	233	234	235
Aleutian Skate												
Arrowtooth Flounder	1.3	11.0	22.9	9.4	21.1	4.2	6.2	4.1		35.9		1.8
Aurora Rockfish												
Big Skate												
Bigfin Eelpout		0.5						0.1				
Bigmouth Sculpin												
Blackbelly Eelpout												
Bocaccio												
Canary Rockfish			1.2			771.3	45.3	26.1				
Darkblotched Rockfish										4.7		
Dover Sole			3.8	1.7	8.5			1.5		18.8		0.7
English Sole												
Eulachon		0.1	0.3									
Flathead Sole												
Greenstriped Rockfish						7.9	11.8	1.3				
Lingcod							4.5					
Longnose Skate			1.7	21.7	13.1					29.0		
Longspine Thornyhead												2.6
North Pacific Spiny Dogfish		2.2			2.2	9.0		2.3				
Pacific Cod						24.2	8.9	1.8				
Pacific Hake		4.0		45.4	58.7					1.1		
Pacific Halibut						3.1				67.6		
Pacific Ocean Perch	16.3	93.8	16.7	485.2	627.2	13.4				876.6		22.6
Pacific Sand Lance												
Pacific Sanddab												
Petrale Sole							3.8	2.5				
Prowfish												
Pygmy Rockfish												
Quillback Rockfish												
Redbanded Rockfish				5.0	32.1			1.3		10.9		8.5
Redstripe Rockfish								227.1				
Rex Sole	1.5			0.4		0.2	0.5	23.6		12.5		
Rosethorn Rockfish	0.9							0.3		5.8		
Rougheye Rockfish		5.7	4.6	29.3	9.4					65.2		16.1
Sablefish		60.2	23.3	68.0	26.8	1.1				29.3		
Sandpaper Skate												
Sharpchin Rockfish	74.9							0.3		0.3		
Shortraker Rockfish										16.8		11.6
Shortspine Thornyhead	2.2	11.8	14.9	10.3	19.7					87.9		22.2
Silvergray Rockfish						264.7	3.6	56.4				
Slender Sole								0.3		0.2		
Southern Rock Sole												
Splitnose Rockfish			1.8		37.1					233.0		
Spotted Ratfish			0.4		1.2	3.0	0.2	0.9		1.9		
Threadfin Sculpin												
Walleye Pollock	-	-				3.2	-	2.0				
Widow Rockfish						4.5		2.2				
Yelloweye Rockfish												
Yellowmouth Rockfish	247.8	6.7						31.4				
Yellowtail Rockfish												
Other	5.5	14.9	24.7	30.6	33.1	5.9	8.0	10.0		10.0		15.0
Total	**350.3**	**211.0**	**116.1**	**707.0**	**890.2**	**1115.6**	**92.6**	**395.5**		**1507.2**		**101.1**

Common Name	236	237	238	239	240	241	242	243	244	245	246	247
Aleutian Skate												
Arrowtooth Flounder	2.5	5.6	3.3	10.0	4.3	11.0	252.9	40.1	20.1	9.8	1.9	42.4
Aurora Rockfish				0.7	8.9	14.0						
Big Skate												
Bigfin Eelpout		0.5	0.4	0.7	0.1	1.0	0.3					
Bigmouth Sculpin												
Blackbelly Eelpout												
Bocaccio												
Canary Rockfish	5.3											
Darkblotched Rockfish					0.9							
Dover Sole	1.7	12.6	12.5	37.7	9.4	37.3	5.8	62.0				0.7
English Sole								101.8	0.9			11.1
Eulachon												
Flathead Sole	0.3						2.0	2.8				
Greenstriped Rockfish	5.9	4.2	3.8				20.4		0.3			
Lingcod								2.4			56.4	
Longnose Skate		2.5		7.0	17.0	13.8						
Longspine Thornyhead					15.2	0.6						
North Pacific Spiny Dogfish	1.0		3.2			3.0	1.8			3.6		
Pacific Cod	17.2						4.3	4.6	0.7			0.3
Pacific Hake			1.2	221.7	47.8	99.9						
Pacific Halibut								7.5	3.0		3.8	11.9
Pacific Ocean Perch		883.8	3751.9	333.3		256.3	380.2					
Pacific Sand Lance											4.5	0.4
Pacific Sanddab								106.2			0.2	2.9
Petrale Sole	7.6			1.0			3.4	0.7				2.9
Prowfish												
Pygmy Rockfish	0.1											
Quillback Rockfish												
Redbanded Rockfish	7.0	2.7	14.1	29.6		2.5	38.6					
Redstripe Rockfish	284.0						51.3					
Rex Sole	8.2	32.1	4.2	12.5	12.3	23.0	10.6	119.7	0.3			1.6
Rosethorn Rockfish	0.3		0.9				1.4					
Rougheye Rockfish				775.2	69.1	735.5						
Sablefish		8.6	3.3	43.0	50.5	96.9	26.5					
Sandpaper Skate				0.9		2.2						
Sharpchin Rockfish	1.4	0.7	46.5				108.9					
Shortraker Rockfish				15.4	73.0	30.1						
Shortspine Thornyhead		9.2	16.1	45.9	93.3	59.8	1.8					
Silvergray Rockfish	11.0		1.5				47.1	3.7				
Slender Sole		1.4	0.2				1.3	0.4				
Southern Rock Sole									7.3	11.4	23.3	2.6
Splitnose Rockfish		24.3	30.7	1.1		0.5						
Spotted Ratfish	1.2	0.9	1.0	1.4		0.6	4.2	0.5	6.5	0.3		
Threadfin Sculpin												
Walleye Pollock		0.5						0.3	0.2	0.1		0.1
Widow Rockfish		13.1	1.6									
Yelloweye Rockfish	8.3											
Yellowmouth Rockfish		310.1	325.0				3.1					
Yellowtail Rockfish	62.6						4.9	1.4				
Other	9.7	5.4	4.1	8.3	34.4	10.0	9.6	4.9	3.3	2.1	6.0	4.3
Total	**435.3**	**1318.3**	**4225.4**	**1545.3**	**435.9**	**1398.0**	**980.5**	**459.1**	**42.6**	**27.3**	**96.2**	**81.1**

Common Name	248	249	250	251
Aleutian Skate				
Arrowtooth Flounder				
Aurora Rockfish				
Big Skate				
Bigfin Eelpout				
Bigmouth Sculpin				
Blackbelly Eelpout				
Bocaccio				
Canary Rockfish				1.1
Darkblotched Rockfish				
Dover Sole				
English Sole	0.7			
Eulachon				
Flathead Sole				
Greenstriped Rockfish				
Lingcod			7.5	
Longnose Skate				
Longspine Thornyhead				
North Pacific Spiny Dogfish	1.9			
Pacific Cod				-
Pacific Hake				
Pacific Halibut	3.7	7.6		
Pacific Ocean Perch				
Pacific Sand Lance	0.3	0.3	0.1	
Pacific Sanddab	2.0	0.7	0.7	
Petrale Sole		2.9	1.6	
Prowfish			0.1	
Pygmy Rockfish			1.0	
Quillback Rockfish			5.1	4.3
Redbanded Rockfish				
Redstripe Rockfish			66.5	
Rex Sole	0.6			
Rosethorn Rockfish				
Rougheye Rockfish				
Sablefish				
Sandpaper Skate				
Sharpchin Rockfish				
Shortraker Rockfish				
Shortspine Thornyhead				
Silvergray Rockfish				
Slender Sole				
Southern Rock Sole	2.2		1.5	0.3
Splitnose Rockfish				
Spotted Ratfish	6.2	17.5	21.6	18.4
Threadfin Sculpin				
Walleye Pollock	0.3	0.2		
Widow Rockfish				
Yelloweye Rockfish				7.9
Yellowmouth Rockfish				
Yellowtail Rockfish				
Other	30.7	7.1	5.9	14.9
Total	**48.6**	**36.4**	**111.5**	**47.1**